Islamic Finance: a low risk, value-adding alternative

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Abstract

In this thesis conventional indices were compared to Shariah compliant indices within the respective regions and asset classes. Within the equity asset class, on the global side, the MSCI World Index was compared to the Dow Jones Islamic Index, within the United States the S&P 500 Index was compared to the S&P Shariah Index and for South Africa the FSTE All Share Index was compared to the FTSE Shariah All Share Index. Within the fixed income asset class, the Barclays Global Aggregate Bond Index and the Merrill Lynch Global Bond Index were compared to the Dow Jones Sukuk Index. In respect of the global and South African equity and the global fixed income, a sample set of Shariah compliant funds were compared to the respective conventional indices.

What was found was that overall for the global equity and the United States comparisons, the Dow Jones Islamic Index and the S&P Shariah Index created higher value than the MSCI World Index and the S&P 500 Index respectively and at a much lower level of debt and therefore risk, over the timeframe analysed. Within the South African equity market, the FTSE All Share Index added more value than the FTSE Shariah All Share Index over the time period reviewed, however these are highly concentrated indices, with the FTSE Shariah All Share Index having an over-exposure to commodities. On the fixed income side, the Barclays Global Aggregate Bond Index and the Merrill Lynch Global Bond Index created more value than the Dow Jones Sukuk Index over the years investigated, however the data and time horizon analysed were limited.

When looking at the funds, definitive conclusions regarding the relative performance between the conventional index and the Shariah compliant fund proxy could not be drawn, however there were certain funds that outperformed the conventional index during specific time periods.

Table of Contents

Chapter One: Introduction

Post the Financial Crisis of 2008, fear of risk in the investment industry has escalated. People who entrust investment professionals with their hard-earned money require a greater degree of confirmation that value will be created with their funds and not destroyed. Wealth managers have had to actively attempt to re-instill confidence in the stock market as stories of business failures and wealth destruction have become popular headlines resulting in diminished investor sentiment. The answer however has always been within Islamic Finance as the low risk, ethical and value accretive investment method. During the height of the 2008 Financial Crisis, the market leading Shariah compliant fund managers outperformed their peers and the market, demonstrating the prudence of this investment strategy. The principles come from a strong belief in a religious framework that promotes social responsibility, ethical behaviour, low debt, investment in the real economy and limited utilisation of speculation and speculative instruments such as derivatives, all accumulating to a value adding method with a greater level of safeguarding of assets.

The field of Islamic Finance is a rapidly expanding one across geographies, types of financial instruments, the number of investment houses offering Shariah compliant products and the value of assets under management. The Shariah Law governs what is permissible in Islam and is drawn from the Quran and Hadith which are records of the sayings and practices of the Prophet Muhammad (SAW). The industry is maturing and becoming increasingly more regulated and structured, with international bodies such as the Islamic Financial Services Board (IFSB), governing and releasing standards to ensure discipline, manage risk and accountability across the industry. (Islamic Financial Services Board, 2010) The General Council for Islamic Banks and Financial Institutions (CIBAFI), that is based in Bahrain and promotes coordination across the industry, safeguards and advocates for the industry globally. (The General Council for Islamic Banks and Financial Institutions, 2019) The Accounting and Auditing Organisation for Islamic Financial Institutions (AAIOFI) promotes harmony across the industry with the introduction of one hundred standards that are followed by all Islamic financial institutions and supported by central banks, regulatory authorities and audit and legal firms across the globe. The standards are focused on Shariah principles, ethics, accounting, auditing and governance for the implementation across the Islamic Finance industry. (The Accounting and Auditing Organisation for Islamic Financial Institutions, 2017) Many countries are considering this area of finance in their legal and regulatory frameworks. The field is transforming, from having a central hub in predominantly Muslim regions such as Malaysia, Dubai and Bahrain, to diverse

cities such as London, New York, Singapore and Hong Kong positioning themselves to join the ranks.

Following 2008, investors are more cautious about where they place their money and many are in search of opportunities that provide a stable and attractive return. There have been countless stories of speculative practices eradicating generational wealth when out of the money. Economic uncertainty may result in wealth destruction and with factors such as trade wars and events such as Brexit currently playing its course, speculative activities should be limited. Islamic Finance only includes investment in real businesses and real things and therefore the downside risk and loss from speculation is avoided, verifying the value accretive nature of this strategy.

1.1 Islamic Finance and the Principles of Shariah Law

Globally, authorities have had to change the business environment to become increasingly regulated due to the high incidents of fraud and unscrupulous business actions. Islam encourages social and ethical business practices as a religious way of life and therefore the risk and cost of litigation to companies for harmful environmental and labour practices is much lower, creating a more certain business landscape. With 'Alternative Investments' and 'Ethical Investments' being buzz terms these days and society having more of a conscience, with green and sustainability movements gaining traction, Islamic Finance fits both of these criteria. This thesis therefore aims to investigate Islamic Finance products as a high quality investment opportunity for Muslims as well as non-Muslims.

In theory, Islamic Finance products are exposed to stricter selection criteria, based on the principles of the Shariah Law, with operations being run with the aim of economic activity benefiting society at large which includes the protection of the environment. A fundamental concept is that all contracts have an underlying asset. The Shariah prohibits Riba which is the earning of profits through trading debt instruments, the earning of profits with no real underlying economic activity, the earning of profits by actively seeking risk or speculative activities and operations that are not acceptable in the Shariah or are not Halal, such as gambling, alcohol, pork, pornography, firearms, derivative instruments and conventional bank deposits and savings products.

Islamic banks differ to conventional banks, with returns on deposits coming from the bank's investment performance. Unlike conventional banks, Islamic banks do not set out any rates in

their contract but rather state the proportion of profits and losses as, if an Islamic bank invests poorly, the depositor could lose their money. However there have been movements to heighten security in Islamic banks with Islamic money market instruments and Islamic lender- of- last-resort facilities, with the Islamic Financial Services Board (IFSB) releasing updated guidance on this topic in 2019, and most governing authorities taking on the responsibility to assist all banks with liquidity when required. Shariah compliant debt instruments are very different to conventional ones with contracts being based on the sharing of business risk between the lender and borrower, and returns being earned through the investment in a real business activity that is in compliance with the Shariah. This is in contrast to the conventional practice of the time value of money. Modern banks use Profit and Loss Sharing contracts to structure their Shariah products. (Hesse, Jobst & Sole, 2008)

Shariah Law does not permit a gearing ratio greater than one. Every unit of debt must be covered by one unit of assets, and interest is not allowed, therefore the probability of business rescue and failure is much lower. In a world of changing interest rates and questionable lending practices, this approach creates lower volatility and advances companies outperformance. In accordance with religious beliefs, Muslims cannot forfeit their debt obligations, creditors have the responsibility to give them a grace period or even a choice to forgive the debt and therefore the likelihood of bankruptcy and bad debt incidents are much lower, substantiated by Islamic banks having much fewer bad debt occurrences than conventional banks. This creates more cost efficiency and surmounts to superior business functioning.

There are two forms of Islamic debt instruments or Sukuk. The oldest one is called Musharakah and it is a partnership between the provider of capital and the entrepreneur who uses the capital. This is a form of venture capital that is often used for long-term projects such as providing funding for small businesses. The second debt instrument is a Murabahah contract and this is a short-term trade finance agreement. With both Musharakah and Murabahah agreements there is a formal contract between the parties that states the amount of funding provided, the proportion of profit shares, what occurs in the event of losses and the terms of arrangement for divestment. Divestment is not done unilaterally as with conventional equity trading, instead there would be consultation with parties before stakes are sold to another party. Murabahah is the most common form of financing in the modern context, with banks preferring longer term contracts to be instituted under Ijara, which is a leasing contract, however with Musharkah there is a sharing of risk. (Wilson, 1997)

Another expanding area of Islamic Finance is that of insurance called Takaful. In compliance with the principles of Islam, the insurance provider sells policies and invests the proceeds. Depending on the performance of the investments, pay-outs are made, however there is always an agreed upon minimum payment set out in the contract. Takaful is implemented with the principles of joint indemnity and shared responsibility for the community. (Institute of Islamic Banking and Insurance, 2019)

Shariah scholars offer great insight and guidance in terms of what is permissible and not permissible when investing in compliance with the Shariah. However it is a Muslim's personal decision as to whether they choose to invest in the conventional equity market, as there are practices that infiltrate the system that is not in compliance with the beliefs of Islam such as Riba. Islamic investment houses however select stocks in companies whose operations are acceptable within the principles of Islam. However, most listed companies have a level of debt and if this is too high then the company will not be invested in or if there is a minor portion of income that is believed not to be permissible then it is the practice in terms of Shariah compliant investments to go through a process of the cleansing of wealth, where returns earned from that portion of income are removed.

The effects of inflation eats away at the wealth of individuals over time and therefore it is of great importance for individuals to invest their money in products that will counteract the value destroying effect of this phenomenon. With rising interest rates globally a more conservative investment philosophy is necessary. Wise investment decisions that multiply value without a 'gamble' strategy is required in order for individuals to maintain and advance their quality of life throughout their life stages. This thesis aims to analyse the potential of Islamic Finance as the chosen strategy for investors seeking an attractive return while being exposed to a lower degree of risk.

The remainder of this thesis is structured as follows. Chapter two is a review of the literature written on Islamic Finance. Chapter three sets out the data used in this study and the methodology used in the analysis of the Islamic Finance industry in comparison to the conventional finance industry. Chapter four is a detailed discussion of the findings of the tests run in order to compare Shariah compliant and conventional investments. Chapter five states the final conclusions of this thesis. Chapter six conveys the limitations of this thesis and recommendations for further research.

Chapter Two: Literature Review

This chapter aims to provide insight into prior research regarding the benefits of Islamic Finance relative to conventional investment approaches. To this end, the review begins by providing a critique of studies which make a case for the structural and ethical benefits of Islamic Finance, particularly in the context of recent market crises and global risk. Following this, there is an analysis of the literature regarding the performance of Islamic assets versus conventional ones within predominantly Muslim regions as well as Western markets. The review focuses on a broad representation of the theoretical and empirical research available to date, in order to determine the areas that require research and how this thesis can add value.

2.1. The case for Islamic Finance

Rodney Wilson (1997) draws a comparison between Islamic investments and Western ethical investments and, while they may focus on different ethical criteria, the importance of stock selection and screening are similar. This paper provides an insight into the main underpinnings of Islamic Finance, and draws the comparisons to the broader field of Ethical Investments, as well as gives a snapshot into the happenings in emerging Islamic financial markets. The study of the performance and structure of funds governed by Islamic Finance principles, as well as the difference in their performance compared to conventional funds is lacking and therefore this presents an opportunity for further research.

Dar and Presley (1999) argued that Islamic Finance is often discussed in isolation despite the extensive literature available in the West that deals with topics such as prohibition of interest and the causes of the business cycle and often results in the identical conclusion. It is argued that the supportive arguments available in Western literature and the empirical evidence would greatly assist scholars in advancing Islamic Finance in the West. This paper introduces a model of linking Western research and theory to key principles in Islamic Finance, with the discussion predominantly centering around interest and business cycles.

Al-Jarhi (2002) discusses the key concept upon which Islamic Finance is based and that is the avoiding of trading at present for money in the future. Under this methodology finance is provided in exchange for equity or the right to a proportional share of future profits. It can also be made accessible in the form of goods and services given, with the agreement for the repayment of its value at a future date. The author argues that Islamic Finance is a more efficient and stable option with lower moral hazard and adverse selection and supports the

advancement of the economy with greater intrinsic integrity, equity and sustainability of future commitments. The paper concludes with a discussion on the reasoning behind Islamic Finance not having spread on a greater scale. The authors reasoning behind this is firstly that Islamic Finance is different, it does not have a sufficient legal and institutional environment, the capital markets at the time were not completely equipped for the information processing required for Islamic Finance, Islamic banks operating within a conventional context have not reached their ideal model, Islamic products will need to increase in number and variety in order to attract the attention of a greater amount of clients, there is the opinion that Islamic Finance does not operate within the authority of governments which is incorrect, Islamic financial institutions are subject to stringent regulatory checks in all operating environments and that new and unconventional methods require a number of pioneers to lead the way. The principle of Islamic Finance, encouraging social upliftment and preservation in all financial decisions, is something that is positive and there is therefore a benefit that would be made possible if this form of Ethical Investment spread and gained more traction in conventional economies.

Jobst (2007) breaks down the core legal principles of Islamic Finance. He presents a valuation model illustrating how Shariah compliant principles can synthesise with conventional finance to form a derivative arrangement. The paper presents the possibility of a valid derivative contract in terms of an Islamic legal perspective and then summarises the arguments presented by Shariah scholars against such forms of structured finance. The paper closes with suggestions of Shariah compliant derivatives. This paper is a controversial one, as conventionally the betting nature of derivative contracts have made them forbidden in terms of the Shariah.

Farooq (2007) provides a more sceptical take on what is said in principle and what is actually put into practice in the field of Islamic Finance. In his publication he discusses that while profit-loss sharing agreements are presented as the ideal by Islamic financial institutions, it is not specifically presented in Islamic texts. The preference for such agreements evolved from interpretations to avoid Riba or interest. He argues that in practice the Islamic financial institutions have in fact avoided profit-loss sharing arrangements and have rather implemented interest-substituting and risk-avoiding forms of finance. He believes that these financial institutions are rational in avoiding profit-loss sharing, as for practical reasons Partnerships are the least common form of organisation. He explains that these reasons also cover equity-financing. He discusses that Islamic financial institutions are organised as banks but mainly function as merchant banks. He concludes in his paper that restricting the field of Islamic Finance to implementing and idealising profit-loss sharing agreements cannot be maintained.

While these agreements are often discussed by Islamic financial institutions, in reality profit-loss sharing agreements are marginalised and conventional banking products are being packaged with an Islamic name, while in substance there is not much difference between the two. As a result conventional banks are entering this niche market, with minimal adaptations to their conventional products and reaping comparable or larger profits than their conventional offering. While this paper has more of a pessimistic stance, it illustrates the need for detailed analysis of the structure and substance of products that are offered by institutions as Islamic instruments, because as a form of Ethical Investments the principles of the Shariah have to be implemented to serve the requirements of its users.

Social responsibility and advancement is a pivotal principle upon which the foundation of Islamic Finance rests. Ahmed (2007) highlights this principle. Giving to those in need or 'Sadaqah' is part of the belief system of Muslims. The concept of 'Waqf' is a 'Sadaqah' that would be continuous. A 'Waqf' is established by the donation of an asset that has perpetuity. In this study a case is presented to launch Waqf-based micro financing which would open the door to the poor to earn a living. Movements to provide micro financing are considered a key means of poverty alleviation globally. This paper presents a theoretical approach and operational framework for this type of micro financing. It looks at conventional MFIs and analyses their strengths and weaknesses. While conventional MFIs have mitigated the issue of credit risk, there is still the issue of moral hazard and economic viability. Financing in an Islamic context involves the transfer of real assets and as a result the issue of diversion of funds to non-productive uses is reduced. Ahmed (2007) argues that utilising Waqf as a means of financing these operations would lessen the financing costs and make these institutions more viable. The paper discusses potential risks that may occur with Waqf-based MFIs. The MFI would need reserves to safeguard its risks. Takaful and profit-equalisation reserves could be used to protect against withdrawal risks and provide depositors with competitive returns. Ahmed (2007) illustrates that the proportion of Waqf funds available for micro financing would depend on the Takaful and economic capital reserves. A greater portion of the Waqf endowment can go towards micro financing as the reserves of the MFI increases. The paper also presents additional sources of funding for the Islamic MFIs other than Zakah and Sadaqat. Islamic banks could also offer micro financing without taking a chunk out of their profits.

Gait and Worthington (2008) found that it was not only religious beliefs that drive the use of Islamic methods of finance but also the reputation of the bank, their quality of service as well as their pricing. When it comes to business firms, they have selection criteria that are more

conventional, for example the cost of finance when it comes to their decisions regarding products and services offered by financial institutions. While there is great interest on the part of financial institutions in providing financial products and services in accordance with Shariah Law, complications with firm management as well as inexperience with business conditions serve as limiting factors. A significant barrier for most financial institutions to provide Islamic methods of finance in their portfolio is the concept of risk-sharing with borrowers. This paper serves as an introduction to attitudes regarding Islamic Finance, however further theoretical as well empirical research can be conducted regarding the influence of religious beliefs on consumers' financial decisions. There is also a bias in the sample of information on which this paper is based, as the majority of research done on the subject of Islamic Finance is conducted within a single nation and therefore there is room for further research in the comparison in an international context.

Khan and Bhatti (2008) found that the Islamic banking and finance industry has been growing and advancing and is becoming a very competitive option to conventional finance globally. Institutions are spreading and rapidly growing in the Middle East and South East Asia. These hubs have served to also launch and promote Islamic banking in Western business and markets. It is found that the key factors resulting in the phenomenal growth of this industry is escalating oil prices globally, an extended boom market in the Middle East, innovation and sophistication in the products offered, greater openness and receptiveness on the part of conventional regulators and the improvement of information technology that has served to catalyse the spread of this industry globally. With the rapid uptake of this industry, Islamic banking has the potential to attract the vast majority of clients from the Muslim world, making up twenty four percent of the global population at the time, as well as other ethical groups in the years to come. While at the time this paper included the most recent information and data, the pool of data was not sufficient in order for statistical testing and analysis to be conclusive in determining the key contributors to Islamic banking and finance having the most rapid growth in the global financial industry.

Hesse, Jobst and Sole (2008) provide a description of key principles and instruments in the field of Islamic Finance, followed by an analysis of the challenges that could hinder the growth of this area of finance and in conclusion possible solutions to these obstacles are presented. Within the context of Islamic banking, the paper highlights legal and regulatory issues and financial stability issues. Regarding Islamic capital markets, the author discusses the market situation, the economic and legal challenges and regulatory consolidation and market

harmonisation. The paper concludes with an analysis of general challenges such as the illiquidity as well as the lack of short term maturities for Sukuk which limits their use in the money market.

Chapra (2009), attempts to find the key causes of the Financial Crises that have affected the global economy over the past three decades specifically the 1998 Long-Term Capital Management breakdown and the Subprime Mortgage Crisis. Chapra (2009) argues that the most significant factor resulting in these crises is insufficient market discipline in the financial system. As a result there is excessive lending and high leverage that eventually results in the crises. The unwinding of assets leads to a cycle of selling and has the outcome of a rapid decline in asset prices, leading to the failure of banks and a slowdown in the economy. If principles of Islamic Finance are implemented such as risk sharing, in addition to the creation of credit available to purchase real goods and services and limitations on the sale of debt, short sales, excessive uncertainty and gambling, there will be far more discipline in the financial system and therefore far more stability.

Hassan and Kayed (2009) present principles of the Islamic financial system, being fairness and socio-economic justice. There is great consideration for current generations but also for the sustainability of future generations. This includes preserving the environment and avoiding burdening future generations with debts. The system of profit and loss sharing is considered more equitable and efficient in distributing income and wealth and as a result entrepreneurs and investors are more incentivised and active. Funds are allocated based on the expected profitability and viability of projects as opposed to the creditworthiness of entrepreneurs. These partnership agreements improve the percentage of business successes, increase discipline in the market with less cases of excessive lending and as a result have a positive effect on the socio-economic well-being of society as a whole.

Ahmed (2010) investigates the causes of the most recent financial crisis in terms of an Islamic Finance perspective. The author attributes these to be, “creating money from money, selling debts – subprime lending, short selling, and absence of risk-sharing”. There is greater prudence within the Islamic Finance industry, with controls and thorough checks and balances, creating discipline in the economy and growth in the real economy following credit expansion. The author therefore argues that it is capable of limiting the extent and how often crises occur. It is argued that Riba, interest and usury as well as Maysir, gambling and other speculative activities were contributors to the Financial Crisis and with these activities not being permissible within Islam and the Islamic principles of the recognition of others interest in your earnings, the

Financial Crisis would not have occurred under this methodology. It is therefore evident that steering clear from economic crisis is a fundamental driver within Islamic Finance. Following the Crisis it is evident that alternative methods of finance are necessary. It is argued that the method of profit and loss sharing under Islamic Finance should be adopted, as opposed to the interest-based model. Since the Crisis the world has seen Islamic Finance in a new light, as a more equitable and efficient alternative to the conventional Western financial system. As a result of interest-based transactions not being permissible, all business transactions are conducted with the aim of a fair and legitimate profit. Within Islamic Finance financial flow and productivity are therefore closely connected and this provided insulation from the risks following too much leverage and speculation.

2.2 Performance of Shariah funds versus conventional funds

Sadeghi (2008) investigated Shariah compliant investment performance within the Malaysian Stock Exchange, a leading region for the field of Islamic Finance. The paper investigates the effect of introducing a Shariah compliant index on the Malaysian Stock Exchange and looks at the performance and liquidity of the shares that make up the index. The author used a methodology looking at an event study in order to estimate the mean cumulative abnormal returns in the days that surround the event. The author created a proxy for liquidity by analysing how the volume of the trade changes as well as the bid-ask spread in periods around the event day. It was found that introducing a Shariah compliant index positively influenced the financial performance of the shares in the index. It was estimated that the mean cumulative abnormal return was 21.73%, the change in the transaction volume was 110.22% and the change in the bid-ask spread was 19.63% from the sixteenth to the one hundred and thirty fifth day after the event. The author presented that the rise in the cost of the information asymmetry resulted in the rise in the bid-ask spread as opposed to a decline in the liquidity in the market. The paper introduced a method to determine the impact of Shariah compliant indices on the performance of the shares included in the index and this can be implemented to Shariah indices in other geographies in predominantly Muslim countries as well as Western regions that have included Islamic Finance in their financial industry.

Kok, Giorgioni and Laws (2009) compared Shariah compliant indices to conventional ones as well as ethical funds. The paper investigated whether co-integration existed with the Shariah compliant and conventional indices and if there is a diversification opportunity. The study looked at the London and New York Stock Exchange for the period 2001 until 2007. What was

found was that within the United Kingdom, Shariah compliant indices present an opportunity to diversify a portfolio in combination with conventional indices and other ethical funds.

Mansoor and Bhatti (2011) analysed data from 1996 until 2009, drawing monthly aggregate returns in order to investigate Islamic and conventional portfolio mutual fund performance in Malaysia. They looked at 128 Islamic mutual funds and 350 conventional mutual funds. Their analysis included 160 observation demonstrating that both Islamic and conventional portfolios outperformed the market portfolio in the timeframe. Their Islamic portfolio however on average generated slightly lower returns in comparison to the conventional ones. In their analysis of risk it was found that the portfolios had a significant difference in their standard deviation and that the Islamic portfolio was riskier than the conventional one. The authors also found that Islamic and conventional portfolios depended on the market portfolio as they closely mirrored the market movements. This paper provides a valuable insight into the Malaysian market and provides a method of comparison between conventional and Islamic funds that can be used in other markets.

Elf and Riffo (2012) compared an Islamic screened benchmark index to a non-screened benchmark index and investigated whether a different risk-adjusted performance was evident. The Dow Jones Islamic Index, the NASDAQ Composite and the Standard and Poors 100 indices were used in the analysis. This paper drew daily figures from 2007 until 2012, which was a period where the impact of the Financial Crisis was dominant. The mean adjusted returns were calculated and the Capital Asset Pricing Model and the Jensen measure of abnormal returns were used in the analysis. The findings of this study was that the Islamic index did not vary in daily mean risk-adjusted returns to the non-screened index. The authors concluded that Muslims who invest in compliance with the Shariah are therefore not disadvantaged due to the screening in comparison to investors who are not restricted.

El Khamlichi, Laaradh, Arouri and Teulon (2014) investigated the persistence of performance of Islamic equity funds. The paper also analysed whether any consistencies in the performance of funds were evident. The analysis included 111 Islamic equity funds and drew data from 2005 until 2011. The study separated the data into three equivalent sub-periods and involved the calculation of various performance measures and non-parametric tests of the persistence in performance. It was found that Islamic funds were not homogeneous and over the period analysed Malaysian and Saudi Arabian funds were the outperformers. It was also found that there was persistence in non-performance of Islamic mutual funds during and after the most

recent Financial Crisis. The authors called into question the management strategies that were put in place by the banks that were managing Islamic funds.

Mumtaz, Usman and Bin Nasir (2014) analysed the risk and returns of Islamic portfolios within Pakistan, a predominantly Muslim region. The authors found that there has been phenomenal growth of Islamic mutual funds globally and this has increased demand from investors with Muslim investors moving their funds to Islamic mutual funds. They discuss that since the 1990s the total wealth under management in Islamic equity funds has increased annually more than fifteen percent, not including capital appreciation. There has been rapid expansion of this industry in Pakistan with the first fund being introduced in 1995 by Al Meezan Investment Management Limited. The value of the total assets of the Islamic equity funds has increased from $800 million in 1996 to $3.6 billion in 2003, a difference of seven years. This paper performed a comparison of the funds to the respective market Islamic and conventional benchmarks by implementing panel data analysis from July 2007 until June 2012. It was found that on average there is insignificant difference in the returns of the Islamic funds in comparison to the benchmarks. It was also found that during the period Islamic fund managers had better skill in selecting funds but were less successful in terms of market timing.

Habib and ul islam (2014) looked at the comparative performance of Islamic indices in India and Malaysia. While Malaysia is a predominantly Muslim region, India is more diverse. The paper presents a discussion about the number of Islamic indices that have evolved globally over time in order to match the rising demand for Shariah compliant equity investments. They mention that there are hundreds of Shariah compliant indices with the Dow Jones and the FTSE Global having been the first to introduce an Islamic Index. The MSCI then followed by launching Islamic indices that are based on the conventional MSCI country indices and represent seventy countries. This paper compared the performance of the MSCI India Islamic Index and the MSCI Malaysia Islamic Index to their respective conventional indices over a period of eleven years from 2003 until 2013. Included in this period is an analysis of performance during the Financial Crisis. The analysis involved average monthly returns and monthly risk-adjusted returns using the time series data of the daily closing prices. The risk was tested by determining beta and standard deviation figures. It was found that in India, the Islamic index underperformed while in Malaysia the Islamic index outperformed the respective conventional indices during the period analysed. In India and Malaysia however the Islamic Index outperformed the conventional index during the Financial Crisis.

Dah, Hoque and Wang (2015) determined the effect that Shariah principles had on the performance of the Dow Jones Islamic Index. This study used four risk-adjusted methods and co-integration analysis to determine if the smaller universe of assets available for Shariah investments restrict investment opportunities and result in an opportunity cost for investors as expected by conventional thinking. What was found was that no opportunity cost exists for Shariah compliant investments. Specifically, the Dow Jones Islamic Mutual Funds do not underperform the conventional United States benchmarks and they do not have co-integration with the conventional indices. The findings were similar for Islamic mutual funds in Saudi Arabia, Malaysia and Kuwait. The study suggests that successful fund managers use creative strategies to overcome any restrictions in terms of the Shariah. The authors expected that demand for these funds would increase as Muslims accounted for twenty five percent of the global population at the time and there is a potential for demand for Shariah funds as an alternative investment opportunity for non-Muslims.

Dhai (2015) compared the performance of the Islamic index to the conventional index in South Africa. The author discusses the expanding field of Islamic Finance within South Africa and globally over the past forty years. The paper intended to demonstrate performance within an emerging market. The Financial Times Stock Exchange South Africa Index was used as the representative of Islamic investments and the returns were compared to three conventional indices for the period 1996 to 2007 with the implementation of single and multiple regression models. The All Share Index on the Johannesburg Stock Exchange was compared using s single-factor regression, the Resources Index and Financial-Industrial Index was compared using a two-factor model and a four-factor model that was created by Carhart in 1997 that includes size, growth and momentum in the market as well as the All Share Index. It was found that there was no significant difference in the performance of the Islamic index and the conventional market.

Pranata and Nurzanah (2016) analysed the performance and volatility of Islamic and conventional indices in Indonesia. The analysis included the Capital Asset Pricing Model to compare the performance of the Jakarta Islamic Index and the conventional LQ45, determining beta as a representation of volatility and the Autoregressive Distributed Lag to highlight the determinants and the reasoning for the outperformance. The data was drawn for January 2006 until November 2015. It was found that there is no significant difference in the performance of the Islamic and conventional index. It was also found that the Islamic index is less volatile than the conventional one with the exception of 2010 and the Islamic index is less impacted by

external events with the exception of the crude oil price. The paper presents that the difficulty is educating and informing society about the Islamic index and that performance is not significantly different and less volatile.

Chapter Three: Data and Methodology

3.1 Data

This thesis aims to compare the performance of conventional investments to those in compliance with Shariah Law. The majority of the data that was used was drawn from Bloomberg, a data provider that provides market and business data, analysis and news. Another information source that was used was Thomson Reuters who also provide detailed market news, data and analysis. Inet, which is now Iress, was also used to obtain data and they are one of the leading data providers used across the financial industry. Morningstar was also used as a source of data especially for the fund specific section of this thesis and they provide ratings, data and analysis for stocks, mutual funds and ETFs.

The thesis opens with a global equity analysis and for this the MSCI World Index was used as the conventional index and the Dow Jones Islamic Index as the Shariah compliant one. As stated on Bloomberg "The MSCI World Index is a free-float weighted equity index. It was developed with a base value of 100 as of December 31, 1969. MXWO includes developed world markets, and does not include emerging markets. MXWD includes both emerging and developed markets." and "The Dow Jones Islamic Market World Index is a global index of companies that meet Islamic investment guidelines. The index is quoted in USD. The DJIM measures the performance of a global universe of investable equities that have been screened for Shari'ah compliance consistent with Dow Jones Indexes' methodology. The selection universe for the DJIM family of indexes is the same as the universe for the Dow Jones World Index, a broad-market index that seeks to provide approximately 95% market coverage of 44 countries." The MSCI World Index is provided by Morgan Stanley Capital International Inc and the Dow Jones Islamic Index by S&P Dow Jones Indices. These indices were the most inclusive, diverse and well-rounded indices to use as a representation of the global investment universe. Results of analyses run on this sample set of information can be held with great value as these are indices structured and governed by reputable houses. Therefore this was the starting point and major section of the investigation.

The next section then looked at the United States market as this is always a market that is observed by the industry and whose performance affects most other countries and, as a result, the performance of the global economy. For the United States market the S&P 500 Index was used as the conventional index and the S&P Shariah Index as the Islamic one. Bloomberg defines these indices as "The S&P 500 is widely regarded as the best single gauge of large-cap

U.S. equities and serves as the foundation for a wide range of investment products. The index includes 500 leading companies and captures approximately 80% coverage of available market capitalization." and "The S&P 500 Shariah index is a market capitalization weight index that is part of the S&P Shariah index series designed to offer investors a set of indices that are compliant with Islamic canonical law. This index is based on the parent index S&P 500, providing investors a comparable investable portfolio while adopting explicit investment criteria defined by the law." The S&P 500 Index as well as the S&P Shariah Index are provided by the S&P Dow Jones Indices. These indices broadly define the market in the United States and therefore can be used to comprehensively compare performance of conventional and Islamic investments within this market.

The analysis of the equity asset class closes with a study of the South African market, given the region from which this paper is written and from which some pioneering funds originate. The FTSE All Share Index was used as the conventional index in this market and the FTSE Shariah All Share Index as the Shariah compliant one. Bloomberg describes the All Share Index as "The FTSE/JSE Africa All Shares Index is a market capitalization-weighted index. Companies included in this index make up the top 99% of the total pre free-float market capitalization of all listed companies on the Johannesburg Stock Exchange." and the JSE defines the FTSE Shariah All Share Index as "FTSE/JSE Shariah All Share Index: The Shariah All Share Index is designed to reflect the Shariah compliant companies, as screened by Yasaar, from the All Share Index." Both the FTSE All Share Index and the FTSE Shariah All Share Index are provided by the Johannesburg Stock Exchange. These indices are the most widely used representations of performance within the South African market through a conventional investment philosophy and a Shariah compliant one and therefore are included as the focal point of the investigation into the South African market.

The final section analyses an alternative asset class, being fixed income. For this the Barclays Global Aggregate Bond Index and the Merrill Lynch Global Bond Index were used as the conventional indices and the Dow Jones Sukuk Index as the Shariah compliant one. Bloomberg defines the Barclays Global Aggregate Bond Index as "The Bloomberg Barclays Global Aggregate Bond Index is a flagship measure of global investment grade debt from twenty-four local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers." and the Dow Jones Sukuk Index as "The index was created as a benchmark for investors seeking exposure to Shariah-compliant fixed-income investments and follows the same

methodology as the Dow Jones Islamic Market™ (DJIM) indices." There was no information provided regarding the definition and structure of the Merrill Lynch Global Bond Index however it was included to create a greater breadth of research, as the amount of data available about these fixed income indices is relatively limited. The Barclays Global Aggregate Bond Index is provided by Bloomberg Barclays Indices, the Merrill Lynch Global Bond Index is provided by Merrill Lynch and the Dow Jones Sukuk Index by S&P Dow Jones Indices. While these indices have their limitations in terms of the explanations available to the public, they are the most comprehensive ones available and therefore are used to most effectively compare the conventional and Islamic fixed income market.

Detailed concentration data of the top ten shares making up the MSCI World Index, the Dow Jones Islamic Index, the S&P 500 Index, the FTSE All Share Index and the FTSE Shariah All Share Index was drawn from Bloomberg as of 31 December 2018, as these were the latest year-end figures. Concentration data was not available for the S&P Shariah Index and therefore was not included in the analysis. These data points are incredibly useful for the study as it indicates the diversification of each index, how well structured each index is and therefore the weight that each index will hold in drawing conclusions in the comparison of conventional and Islamic Finance investments. It is important to be aware of the makeup of each index in order to conduct an informed analysis.

Year-end prices were drawn from Bloomberg for the MSCI World Index, the Dow Jones Islamic Index, the S&P 500 Index, the S&P Shariah Index, the FTSE All Share Index, the FTSE Shariah All Share Index, the Barclays Global Aggregate Bond Index and the Dow Jones Sukuk Index. The year-end prices for the Merrill Lynch Global Bond Index were drawn from Thomson Reuters. These figures were drawn in order to calculate compound annual growth rates, which is the rate of growth from the starting to ending value if the gains were reinvested at the end of each year and accounts for compounding. It is calculated as:

$$\text{Compound Annual Growth Rate} = \left[\frac{Ending\ Value}{Starting\ Value}^{\frac{1}{Number\ of\ years}} - 1 \right] \times 100$$

It represents growth over more than one time period and therefore is an incredibly useful measure as this is a long-term analysis. Where possible these figures were calculated over one year, three year, five year, ten year, fifteen year and twenty year timeframes. The data was also used to calculate annual return figures over a maximum of ten years from 2008 until 2018. This measure represents the growth of the price of each index over a year and is calculated as:

$$\text{Annual Rate of Return} = \left[\frac{End\ of\ year\ value}{Beginning\ of\ year\ value} - 1 \right] \times 100$$

Finally the index prices were rebased to one hundred and the relative returns plotted out for a maximum timeframe until 31 December 2018, in order to determine the relative performance of the respective conventional and Shariah compliant indices. This exercise was performed by calculating the monthly returns and then using the starting point of one hundred and growing it by the monthly return using the formula:

$$100 \times \left(1 + \frac{R_t}{100}\right)$$

Where R_t is the monthly index return

This value was then used as the starting point for the next month and increased by the monthly return of the index for the period under review. For the MSCI World Index and the Dow Jones Islamic Index, the returns were rebased on 31 December 1995, the S&P 500 Index and the S&P Shariah Index were rebased on 31 December 2000, the FTSE All Share Index and the FTSE Shariah All Share Index were rebased on 30 November 2007, the Barclays Global Aggregate Bond Index and the Dow Jones Sukuk Index were rebased on 30 September 2005 and the Merrill Lynch Global Bond Index and the Dow Jones Sukuk Index on 28 February 2006. Subject to availability of data, prices for both the conventional and Shariah compliant indices being compared, were drawn in order to conduct a long-term analysis, with the cut-off point of twenty year return figures. The most data was available for the MSCI World Index and the Dow Jones Islamic Index and therefore index prices were drawn from 31 December 1998 until 31 December 2018. For the S&P 500 Index and the S&P Shariah Index prices were drawn over a fifteen year time period from 31 December 2003 until 31 December 2018. The FTSE All Share Index and the FTSE Shariah All Share Index prices were drawn from 31 December 2007 until 31 December 2018, enabling an eleven year analysis. On the fixed income side, the Barclays Global Aggregate Bond Index, the Merrill Lynch Global Bond Index and the Dow Jones Sukuk Index prices were drawn over an eleven-year period from 31 December 2007 until 31 December 2018. For the Merrill Lynch Global Bond Index and the Dow Jones Sukuk Index, monthly Yield to Maturity figures were drawn from 1 January 2014 until 31 December 2018 and then a five-year average was calculated. This was done in order to determine the expected return if the bonds were held to maturity, in order to gain more insight into the comparison between conventional and Islamic bonds.

The analysis then moved on to look at risk and returns in relation to risk. Standard deviations and Sharpe ratios were calculated in this section. The standard deviation is used as the representation of risk by calculating the amount by which the returns differ from the mean value. The standard deviation is calculated as:

Standard deviation=$\sqrt{\frac{\sum(x_i - x_{avg})2}{n-1}}$

x_i= return

x_{avg}= mean return

$n =$ number of years

The Sharpe ratio represents the excess return above the risk-free rate per unit of risk and was calculated as:

Sharpe ratio = $\frac{r_p - r_f}{\sigma_p}$

r_p= portfolio return

r_f= risk-free rate

σ_p= standard deviation of portfolio excess return

For this section monthly returns figures were drawn from Bloomberg and for the Sharpe ratios the relevant risk-free rates were drawn on a monthly basis, for a maximum of twenty-one years where possible. For all calculations except the South African market the United States ten year government bond rate was used as the risk free rate and these figures were drawn from Bloomberg for twenty-one years from 1 January 1998 until 31 December 2018. For the South African market the South African ten year government bond rate was used as the risk free rate and these monthly figures were drawn from Iress for a period of eleven years, from 1 January 2008 until 31 December 2018. The standard deviations and Sharpe ratios were then annualised to use in the analysis. Where possible average figures were calculated over intervals of three years, five years, ten years and fifteen years, with the aim of gaining an idea of overall risk and return relative to risk for each index for a maximum time period.

For the MSCI World Index and the Dow Jones Islamic Index, as well as the S&P 500 Index and the S&P Shariah Index the ratios discussed below were drawn from Bloomberg for a period of eleven and ten years respectively, from 31 December 2009 until 31 December 2018 for the global indices and from 31 December 2008 until 31 December 2018 for the United States ones. For all other indices these ratios were not available and therefore not included. The Price to Earnings ratio that is calculated as the "Ratio of the price of a stock and the company's earnings per share. For all countries not otherwise mentioned below it is calculated as Last Price divided by Trailing 12M EPS." (Bloomberg, 2019) This ratio is used as a guide of the relative value of each index and as result gives an indication of how expensive a Shariah compliant investment would be in relation to a conventional one. For investors this measure is therefore incredibly useful. The Dividend Yield is the "Sum of gross dividend per share amounts that have gone ex-dividend over the prior 12 months, divided by the current stock price. Gross and Net Dividend amounts are assumed to be the same when only one is reported. All Cash Dividend Types are included in this yield calculation." (Bloomberg, 2019) This measure was included in the analysis as it reflects the return to shareholders other than price gains. Dividends are an important measure for shareholders as, if they intend on holding and not selling their stocks for some time, dividends are their most likely means of return. This ratio therefore can be used to compare the relative returns in the form of dividends to investors who invest in investments in compliance with the tenets of Islam and those who invest conventionally. The Free Cash Flow Yield that "Calculates (in percentage) the return expected per share."

The Free Cash Flow Yield is calculated as:

$$\frac{Trailing\ 12\ month\ Free\ Cash\ Flow\ per\ Share}{Last\ Price} \times 100$$

(Bloomberg, 2019)

This ratio was included in the study as it indicates the ability to meet obligations. With relative stability being a key factor in this thesis, this measure can be used to effectively compare the Shariah compliant and conventional investments with their ability to satisfy potential payments such as debts, as well as dividends that directly benefit shareholders. This measure also gives an indication of the relative risk of each investment, as ones with greater free cash flow are expected to have greater financial safeguards. The Return on Equity that is a "Measure of a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested, in percentage." The Return on Equity is calculated as:

Return on Equity=

$$\frac{Trailing\ 12\ month\ Net\ Income\ Available\ for\ Common\ Shareholders}{Average\ Total\ Common\ Equity} \times 100$$

(Bloomberg, 2019)

This is a key measure of performance and therefore was included in the analysis. It indicates the success of generating profits from the available net assets. It can be used to effectively compare Shariah compliant and conventional investments and the relative performance from which shareholders benefit. The Net Debt to EBITDA ratio that "Computes the company's ability to pay off its debt by utilizing the earnings before interest, taxes, depreciation and amortization (EBITDA)."

The Net Debt to EBITDA is calculated as:

$$\frac{Net\ Debt}{Trailing\ 12\ month\ EBITDA}$$

(Bloomberg, 2019)

This measure indicates a company's ability to meet its debt obligations and therefore is an important indication of relative risk. As over indebtedness has in the past proven to be a weakness in the financial sector resulting in instability, a comparison of the debt involved in Shariah compliant investments and conventional ones is an important exercise when attempting to gauge relative risk. For each ratio average figures were calculated for five and ten years in order to see whether any trends were evident. These ratios were included to give a rounded perspective from a market, profitability, balance sheet and cash flow perspective in order to have a more in depth grasp on Shariah compliant investments in comparison to conventional ones.

The final data that was drawn was fund specific performance figures in order to illustrate the real life returns generated by fund managers that are implementing the principles of Islam in their investment decisions and comparing it to conventional indices' performance. Notable global, South African and fixed income funds were selected based on criteria such as duration of existence and scale. The compound annual growth rate figures of these funds were drawn from Morningstar for a maximum of fifteen years, from 2003 until 2018 according to availability of data. These rates were drawn in intervals of one year, three years, five years, ten years and fifteen years in order to observe short-term, medium-term and long-term performance. On the global side the funds that were identified were: the Oasis Crescent Global

Equity Fund, the BNP Paribas Islamic Equity Optimiser, the Templeton Shariah Global Equity and the Aberdeen Islamic Global Equity. On the South African side the funds that were used were: the Oasis Crescent Equity Fund, the AVG Shariah General Equity, the 27Four Shari'ah Active Equity Prescient, the Element Islamic Equity Fund and the Old Mutual Al Barakah Equity Fund. On the fixed income side the funds that were included in the analysis were: the Oasis Crescent Global Income Fund, the Franklin Global Sukuk Fund, the BNP Paribas Islamic Hilal Income, the Rasmala Global Sukuk Rasmala and the Emirates Global Sukuk USD. Within each timeframe the average of the fund returns was calculated as a proxy for Shariah compliant investments within certain geographies and asset classes in order to compare to conventional indices performance.

When drawing data for this thesis there was an approach of selecting the most high quality data, from reputable sources that meet industry standards, for a considerable duration of time in order for valuable insights to be gained. Shariah compliant indices were as closely matched as possible to the conventional ones within geographies and asset classes in order to conduct the most effective comparison.

3.2 Methodology

This thesis aims to provide a comprehensive qualitative and quantitative analysis comparing conventional investments to investments in compliance with the Shariah Law.

Indices are the most extensive proxy for each form of investment and the methodology behind this study is to compare the price performance of conventional indices to Islamic ones across markets and asset classes. The investigation will then conclude with a comparison of Shariah compliant fund specific performance to conventional indices. Detailed return and ratio analysis will be conducted in order to form a thorough opinion. The thesis will look at the fundamental principles and theory behind this form of investment and then link this to the numerical examination.

Some areas of the field of Islamic investments are relatively new such as fixed income instruments and therefore data can be limited. The method of this study will be to draw data for as far as possible and at most attempt to analyse data for a period of twenty years. Where possible results will be broken down on a one year, three year, five year, ten year, fifteen year and twenty year basis, in order to draw conclusions about short-term, medium-term and long-term performance. Shariah compliant investment houses often promote it as a long-term stable

investment and this analysis will test what performance is like over each time horizon and whether any trends are evident.

The study will never make any drastic assumptions but rather state what numerical evidence has been found and only if clear trends present themselves over many time periods, will any assumptions be presented as a possibility, with a disclaimer of the timeframes being stated. As the market can never one hundred percent be predicted, trends of past performance can be presented as a possibility for the future, and comparisons of conventional and Islamic Finance investments can be drawn.

The thesis followed an approach of first analysing the global market and for this the MSCI World Index and the Dow Jones Islamic Index were compared. Opening with an analysis of the global market was most fitting as this thesis aims to draw conclusions about Shariah compliant investments in comparison to conventional ones overall, with as far as possible no bias to specific regions. The next section then looked at the market in the United States, being the biggest economy in the world and an example of a developed market and for this the S&P 500 Index and the S&P Shariah Index were compared. As this is a South African thesis, the FTSE All Share Index was then compared to the FTSE Shariah All Share Index, in order to close our review of conventional and Shariah compliant equity investments with an example of a developing market. The analysis then moved on to a study of fixed income securities and compared conventional bonds to Islamic Sukuk on a global scale. For this the Barclays Global Aggregate Bond Index and the Merrill Lynch Global Bond Index were compared to the Dow Jones Sukuk Index.

For each section, where data was available, the makeup of the index was reviewed by drawing the top ten concentration figures. The analysis then followed on to a detailed look at performance and the index prices were drawn in order to calculate returns annually and on a compound annual basis as well as rebasing for an analysis of relative performance. The study then moved on to look at risk and returns in relation to risk, by calculating the standard deviation and Sharpe ratios using the returns data drawn and for the proxy of the risk-free rate, using the United States ten year government bond rate and for the South African market the South African equivalent.

A detailed analysis of the ratios for each index was then conducted using data drawn from Bloomberg. This was done to provide a deeper insight on the relative attractiveness of Shariah compliant and conventional investments. Where data was available the Price to Earnings ratio,

Dividend Yield, Free Cash Flow Yield, Return on Equity and Net Debt to EBITDA ratios were compared.

Each section then closed with an analysis of relative specific fund performance. Data of the performance of significant Shariah compliant funds were drawn and a proxy for Shariah compliant funds was calculated. On the conventional side the indices were used as the proxy for conventional fund performance. This exercise was performed on a global and South African basis on the equity side and from a global perspective on the income side. On the global equity side the Shariah compliant proxy was compared to the MSCI World Index and on the South African equity side the proxy was compared to the FTSE All Share Index. On the fixed income side the Shariah compliant proxy was compared to both the Barclays Global Aggregate Bond Index as well as the Merrill Lynch Global Bond Index in order to perform a comprehensive analysis, given the limited data available for fixed income securities.

The methodology behind this thesis was to be an extensive introductory guide to the field of Islamic investments with the backing of sound numerical evidence.

Chapter Four: Findings

4.1 MSCI World Index and Dow Jones Islamic Index comparison

The starting point for this analysis is a comparison between the MSCI World Index and the Dow Jones Islamic Index. These indices are the most appropriate comparison as they both represent global indices, one using the conventional investment philosophy and the other in compliance with the principles of Islam. They are both widely used in the industry as a representation of the global market performance. The Dow Jones Islamic Index was the first Shariah compliant index to have been formulated. While the MSCI World Index includes developed markets only, the Dow Jones Islamic Index includes both developed and developing markets, which while is not completely consistent in the comparison, it does indicate the real life implementation of Shariah compliant investments that often expose investors to more developing markets given the locations in which many of these funds exist, while traditional conventional investments are often dominated by developed market exposure.

MSCI World Index Top 10 Shares

	TICKER	NAME	SECTOR	WEIGHT (%)
1	AAPL UW	Apple Inc	Technology	2.13
2	MSFT UW	Microsoft Corp	Technology	2.07
3	AMZN UW	Amazon.com Inc	Communications	1.74
4	JNJ UN	Johnson & Johnson	Consumer, Non-cyclical	0.97
5	JPM UN	JPMorgan Chase & Co	Financial	0.92
6	GOOG UW	Alphabet Inc	Communications	0.91
7	FB UW	Facebook Inc	Communications	0.88
8	GOOGL UW	Alphabet Inc	Communications	0.87
9	XOM UN	Exxon Mobil Corp	Energy	0.81
10	BRK/B UN	Berkshire Hathaway Inc	Financial	0.74
	TOTAL			**12.04**

Dow Jones Islamic Index Top 10 shares

	TICKER	NAME	SECTOR	WEIGHT (%)
1	MSFT UQ	Microsoft Corp	Technology	3.57
2	AAPL UQ	Apple Inc.	Technology	3.24
3	JNJ UN	Johnson & Johnson	Consumer, Non-cyclical	1.58
4	GOOG UQ	Alphabet Inc C	Communications	1.45
5	FB UQ	Facebook Inc A	Communications	1.43
6	GOOGL UQ	Alphabet Inc A	Communications	1.42
7	XOM UN	Exxon Mobil Corp	Energy	1.31
8	PFE UN	Pfizer Inc	Consumer, Non-cyclical	1.15
9	NESN SW	Nestle SA Reg	Consumer, Non-cyclical	1.13
10	V UN	Visa Inc A	Financial	1.06
	TOTAL			**17.33**

The MSCI World Index and the Dow Jones Islamic Index are the most comprehensive indices upon which to base this study as they offer a global perspective, are most diversified and there is the largest amount of data available. The top ten shares in the MSCI World Index comprise 12.04% and the top ten shares of the Dow Jones Islamic Index comprise 17.33% of the index. The Dow Jones Islamic Index is therefore more concentrated, which is to be expected with the stricter selection criteria in order to be in accordance with the Shariah Law and thus there is a smaller universe in which to invest in the listed market. The highest weighted share in the MSCI World Index is Apple Inc. at 2.13% weighting and that in the Dow Jones Islamic Index is Microsoft Corp with a weighting of 3.57%. All companies that are in the top ten shares of the MSCI World Index are also in the top ten shares of the Dow Jones Islamic Index with the exception of Amazon.com Inc, JPMorgan Chase & Co, and Berkshire Hathaway Inc. The operations of these companies may have not complied with the criteria based upon Shariah principles, for example conventional banks that conduct interest-earning activities. Communications appears to be the major component of the MSCI World Index making up 4.41%, slightly more than Technology that comprises 4.20%, the next major industry being Financial making up 1.66%, Consumer (Non-cyclical) comprising 0.97% and finally Energy at 0.81%. In comparison the major component of the Dow Jones Islamic Index is Technology comprising 6.81%, followed by Communications at 4.31%, Consumer (Non-Cyclical) at 3.85%, Energy at 1.31% and finally Financial at 1.06%. As would be expected Financial

enterprises would make up a smaller component of the top ten shares in the Dow Jones Islamic Index with more stringent criteria for the proportion of interest bearing activities and the cleansing thereof. There is no overconcentration of a specific industry in both indices. These indices have been well structured based on the selection criteria and therefore are the best proxies for conventional equities performance compared to that of equities in accordance with Islamic principles.

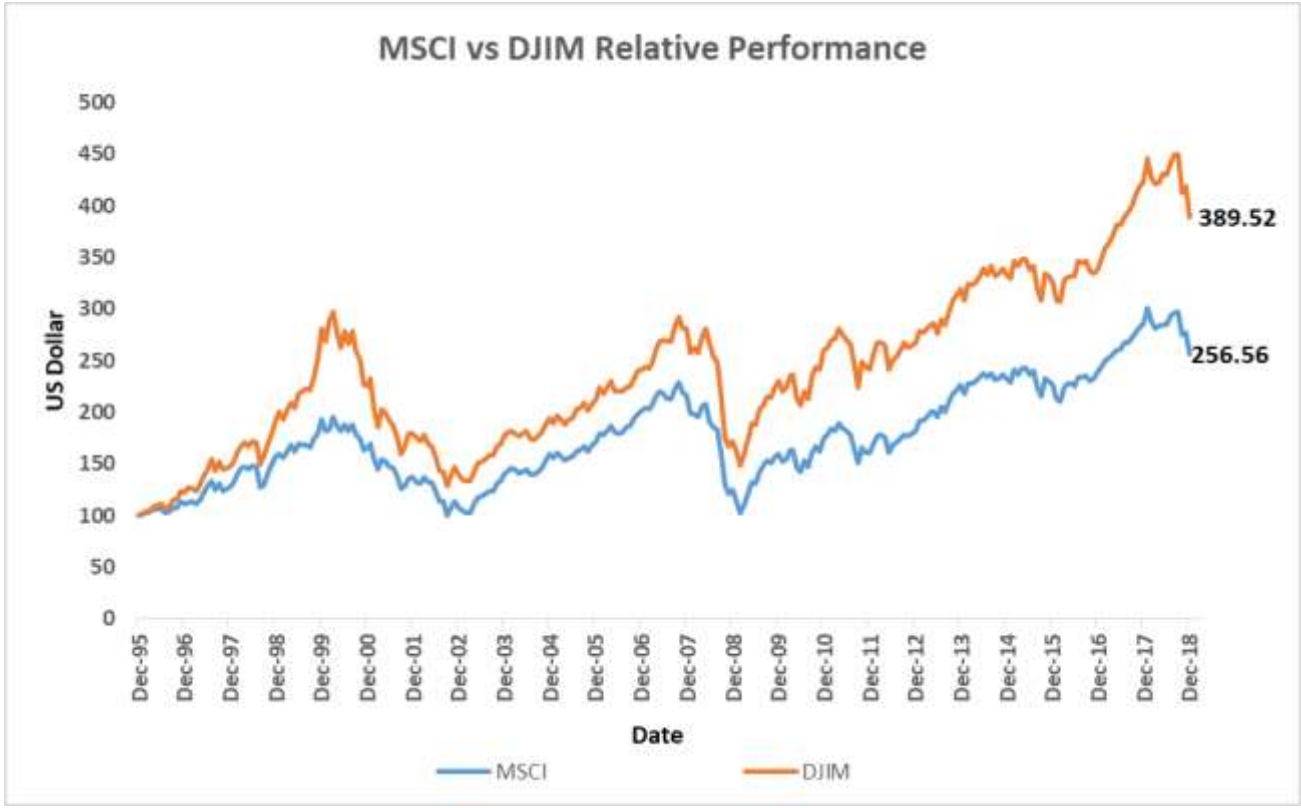
Performance	1YR CAGR	3YR CAGR	5YR CAGR	10YR CAGR	15YR CAGR	20YR CAGR
MSCI World Index	-10.44%	4.25%	2.55%	7.43%	4.06%	2.50%
Dow Jones Islamic Index	-8.16%	6.07%	4.05%	8.52%	5.34%	3.60%

After completing an analysis into the shares making up the MSCI World Index and the Dow Jones Islamic Index an analysis was conducted comparing the performance of each index on a short term, medium term and long term basis. This exercise was performed for a period of twenty years. The starting point was 31 December 1998 and the end point was 31 December 2018. Performance was measured as the compound annual growth rate of the index price. What stood out was that in all time frames, on a short term, medium term and long term perspective, the Dow Jones Islamic Index outperformed that of the MSCI World Index. In declining markets, such as the past year, the Dow Jones Islamic Index declined less than the MSCI World Index, with one year compound annual growth rates of -8.16% and -10.44% respectively, a 228 basis point difference and in overall growth markets the Dow Jones Islamic Index increased more than the MSCI World Index. This test therefore speaks very favourably of the performance of the Islamic fund compared to the conventional fund over the period under review.

Annual Performance	2008	2009	2010	2011	2012	2013	2014
MSCI World Index	-42.08%	26.98%	9.55%	-7.62%	13.18%	24.10%	2.93%
Dow Jones Islamic Index	-38.87%	33.80%	12.81%	-7.12%	11.07%	19.24%	4.49%

Annual Performance	2015	2016	2017	2018
MSCI World Index	-2.74%	5.32%	20.11%	-10.44%
Dow Jones Islamic Index	-2.22%	3.81%	25.18%	-8.16%

Once an overall perspective of performance was gained, a deeper test was necessary in order to determine performance in specific years, for example of interest was the performance of each index during the 2008 Global Financial Crisis. A ten year analysis of annual performance, from 31 December 2008 until 31 December 2018, was done which is determined by calculating the annual growth rates in the price of each index. This investigation highlighted that during 2008 the Dow Jones Islamic Index declined less than the MSCI World Index at -38.87% and -42.08% respectively, a 321 basis point difference. The same occurred during other years of decline including 2011, 2015 and 2018. It is therefore evident that the Islamic fund was the more stable option for the most recent decade, compared to the conventional fund proxy, as during times of recession or decline it declined less. There were times during growth markets such as 2009, 2010, 2014 and 2017 when the Dow Jones Islamic Index increased more than the MSCI World Index but then there were also times when the MSCI World Index had greater gains such as 2012, 2013 and 2016. However the number of years of outperformance of the Dow Jones Islamic Index outnumbers the years of underperformance and therefore the theory of this thesis still holds up for the timeframes being investigated.



(MSCI World Index represented as MSCI and Dow Jones Islamic Index represented as DJIM in graph above)

A further study was then conducted in order to gain a final perspective of overall performance by rebasing each index to $100 on 31 December 1995. As can be seen in the above graph $100 invested had greater value invested in the Dow Jones Islamic Index in all years compared to $100 invested in the MSCI World Index and with the last data point being 31 December 2018, $100 invested in the Dow Jones Islamic Index was worth more at $389.52 compared to that of the MSCI World Index which was worth $256.56. This is a drastic difference, with an investment in the Dow Jones Islamic Index being worth 51.82% more than one in the MSCI World Index for the period analysed. This exercise once again advocates for the superior investment opportunity in the Dow Jones Islamic Index in comparison to the MSCI World Index for the period 31 December 1995

until 31 December 2018. The stricter selection criteria for Shariah compliant investments, therefore appear to have resulted in better investment decisions, creating greater value for the period analysed in comparison to the conventional counterpart.

Standard Deviation (%)	1998	1999	2000	2001	2002	2003
MSCI World Index	5.42	3.53	3.99	5.03	5.34	3.39
Dow Jones Islamic Index	5.35	3.57	5.52	6.57	5.41	2.89

Standard Deviation (%)	2004	2005	2006	2007	2008	2009	2010
MSCI World Index	2.26	2.26	2.06	2.58	6.53	6.43	5.69
Dow Jones Islamic Index	2.21	2.71	2.66	2.59	6.84	5.51	5.51

Standard Deviation (%)	2011	2012	2013	2014	2015	2016	2017	2018
MSCI World Index	4.88	3.62	2.59	2.31	3.86	3.02	0.81	3.77
Dow Jones Islamic Index	5.08	3.74	2.36	2.49	3.69	3.03	0.90	3.89

Standard Deviation (%)	3YR AVE	5YR AVE	10YR AVE	15YR AVE
MSCI World Index	2.53	2.75	3.70	3.51
Dow Jones Islamic Index	2.60	2.80	3.62	3.55

The next section moves on to an analysis of risk, measured by the standard deviation of the return for each index. The standard deviation represents the volatility of an investment as a variation from the mean. This analysis looks at the period 1998 until 2018 in order to gain a meaningful insight. In the periods 1998, 2003, 2004, 2009, 2010, 2013 and 2015 the MSCI World Index had a higher standard deviation than the Dow Jones Islamic Index and in all other years vice versa. Therefore on a three year, five year and fifteen year time period the Dow Jones Islamic Index had a higher

average standard deviation than the MSCI World Index however in a ten year time frame the MSCI World Index had a slightly higher average standard deviation than the Dow Jones Islamic Index, by 8 basis points. Overall it appears that the Dow Jones Islamic Index had a greater degree of volatility compared to the conventional index for the period investigated.

Sharpe Ratio	1998	1999	2000	2001	2002	2003
MSCI World Index	0.92	1.33	-1.45	-1.31	-1.42	2.03
Dow Jones Islamic Index	1.29	2.76	-1.37	-1.08	-1.50	2.15

Sharpe Ratio	2004	2005	2006	2007	2008	2009	2010
MSCI World Index	1.04	0.43	1.70	0.30	-2.40	1.05	0.40
Dow Jones Islamic Index	0.60	0.47	1.01	1.23	-2.06	1.47	0.57

Sharpe Ratio	2011	2012	2013	2014	2015	2016	2017	2018
MSCI World Index	-0.54	0.92	2.21	0.09	-0.30	0.37	5.75	-1.00
Dow Jones Islamic Index	-0.49	0.75	1.92	0.27	-0.28	0.23	6.53	-0.78

Sharpe Ratio	3YR AVE	5YR AVE	10YR AVE	15YR AVE
MSCI World Index	1.71	0.98	0.90	0.67
Dow Jones Islamic Index	2.00	1.19	1.02	0.76

An analysis of the Sharpe ratio of each index was conducted in order to gain an insight into the level of performance in relation to the risk exposure. Annual figures were calculated from 1998 until 2018, as well as average figures in order to determine an overall trend. Over the twenty year period analysed the Dow Jones Islamic Index had a greater Sharpe ratio than the MSCI World Index in all years except 2002, 2004, 2006, 2012, 2013

and 2016. Therefore when looking at the averages the Dow Jones Islamic Index had a greater average Sharpe ratio than the MSCI World Index on a three year, five year, ten year and fifteen year basis. It is therefore understood that the Dow Jones Islamic Index had a greater return per unit of risk than the MSCI World Index on a short term, medium term and long term perspective. Given the analysis of the standard deviations above, with the Dow Jones Islamic Index having a greater standard deviation for most periods, it is assumed that overall the higher Sharpe ratios are a result of higher returns from the Dow Jones Islamic Index compared to the MSCI World Index.

Following the detailed study of the components, performance as well risk of the MSCI World Index in comparison to the Dow Jones Islamic Index it is necessary to analyse and compare the valuation metrics of these indices over time and below this will be completed from the period 31 December 2008 until 31 December 2018.

Price to Earnings Ratio	2008	2009	2010	2011	2012	2013
MSCI World Index	15.43	22.19	15.14	13.65	15.87	19.32
Dow Jones Islamic Index	10.84	18.83	16.36	13.45	15.65	18.85

Price to Earnings Ratio	2014	2015	2016	2017	2018	10YR AVE	5YR AVE
MSCI World Index	17.87	20.07	20.47	20.07	15.41	18.01	18.78
Dow Jones Islamic Index	19.46	21.62	22.60	23.24	18.06	18.81	21.00

The first ratio of interest is the Price to Earnings ratio, as an indication of how ‘expensive’ the MSCI World Index is compared to the Dow Jones Islamic Index. There are years where the Dow Jones Islamic Index had a lower Price to Earnings ratio than the MSCI World Index such as 2008, 2009, 2011, 2012 and 2013, and then there are years where the reverse occurs such as 2010, 2014, 2015, 2016, 2017 and 2018. Average figures were calculated in order to gain an overall perspective and on a ten year and five year basis the MSCI World Index had a lower average Price to

Earnings ratio than the Dow Jones Islamic Index and is therefore the 'cheaper' index in which to invest, which is to be expected as the Dow Jones Islamic Index is more niche.

Dividend Yield (%)	2008	2009	2010	2011	2012	2013
MSCI World Index	3.94	2.53	2.40	2.90	2.84	2.41
Dow Jones Islamic Index	3.02	2.04	1.96	2.35	2.44	2.04

Dividend Yield (%)	2014	2015	2016	2017	2018	10YR AVE	5YR AVE
MSCI World Index	2.49	2.58	2.48	2.32	2.73	2.57	2.52
Dow Jones Islamic Index	2.04	2.17	2.07	1.88	2.11	2.11	2.05

The next ratio that was analysed was the Dividend Yield as an indication of the relative return to investors in the form of dividends from each index. In all the years in the sample set the MSCI World Index had a higher Dividend Yield than the Dow Jones Islamic Index. When calculating the ten year and five year averages the Dow Jones Islamic Index was at a slight disadvantage in terms of Dividend Yield, 46 basis points lower on a ten year average and 47 basis points lower on a five year average than the MSCI World Index. While the Dow Jones Islamic Index does present a slightly lower return to investors in the form of Dividend Yield it makes up for it in terms of price performance as discussed earlier.

Free Cash Flow Yield (%)	2008	2009	2010	2011	2012	2013
MSCI World Index	14.35	5.80	7.48	9.28	5.72	5.13
Dow Jones Islamic Index	6.41	5.02	4.95	6.13	4.49	4.39

Free Cash Flow Yield (%)	2014	2015	2016	2017	2018	10YR AVE	5YR AVE
MSCI World Index	5.03	6.07	6.18	4.42	6.24	6.14	5.59
Dow Jones Islamic Index	4.24	4.33	4.58	4.00	4.84	4.70	4.40

Free Cash Flow is a very important measure for investors as an indication of ability to satisfy obligations and therefore the Free Cash Flow Yield of each index is a notable ratio to compare. In all years under investigation the MSCI World Index outperformed the Dow Jones Islamic Index in terms of Free Cash Flow Yield. The ten year and five year averages follow through with the MSCI World Index having a higher Free Cash Flow Yield than the Dow Jones Islamic Index. The MSCI World Index had a 144 basis point higher ten year average and a 119 basis point higher five year average than the Dow Jones Islamic Index. The MSCI World Index therefore had greater strength in cash flow than the Dow Jones Islamic Index however it is not as significant an issue as Islamic investments should have a lower level of debt than conventional ones and therefore there should be less risk of potential obligations to meet with cash flow.

Return on Equity (%)	2008	2009	2010	2011	2012	2013
MSCI World Index	6.97	7.80	12.35	11.61	10.58	12.03
Dow Jones Islamic Index	15.19	12.91	16.51	17.59	14.92	15.93

Return on Equity (%)	2014	2015	2016	2017	2018	10YR AVE	5YR AVE
MSCI World Index	12.18	9.55	10.12	12.19	13.74	11.22	11.56
Dow Jones Islamic Index	15.78	13.70	14.61	15.75	18.42	15.61	15.65

A key measure of relative attractiveness of an investment is the Return on Equity and therefore a comparison of this ratio for each index was conducted. In terms of Return on Equity the Dow Jones Islamic Index outperformed the MSCI World Index in all the years under review. The ten

year and five year averages of the Return on Equity for the Dow Jones Islamic Index was significantly higher than the MSCI World Index. The Dow Jones Islamic Index had a 439 basis point higher ten year average and a 409 basis point higher five year average than the MSCI World Index. In terms of Return on Equity investing in the Dow Jones Islamic Index presents an impressive advantage over the MSCI World Index for the period analysed. This is an attractive measure for investors, as while an investment in the Dow Jones Islamic Index may be more expensive than the MSCI World Index for most time periods looked at, the return to shareholders is notably higher.

Net Debt/EBITDA	2008	2009	2010	2011	2012	2013
MSCI World Index	5.09	4.66	3.81	3.57	3.53	2.98
Dow Jones Islamic Index	0.52	0.22	0.13	0.13	0.21	0.17

Net Debt/EBITDA	2014	2015	2016	2017	2018	10YR AVE	5YR AVE
MSCI World Index	2.63	2.69	2.31	2.05	1.91	3.01	2.32
Dow Jones Islamic Index	0.27	0.47	0.44	0.33	0.42	0.28	0.39

The final valuation metric considered was the Net Debt to EBITDA as an indication of risk of the MSCI World Index compared to the Dow Jones Islamic Index. In all the years considered, the Dow Jones Islamic Index had a significantly lower Net Debt to EBITDA compared to the MSCI World Index. The strikingly lower level of debt is further illustrated with the lower ten year and five year average Net Debt to EBITDA figures for the Dow Jones Islamic Index compared to the MSCI World Index. This is an exceptional advantage for the Dow Jones Islamic Index as determined earlier an investor is receiving a higher return at a significantly lower level of debt and is therefore exposed to less risk. With interest rates rising, lower debt levels present a safeguard for Shariah compliant investors compared to conventional ones.

Performance (%)	CAGR				
	1 Year	3 Year	5 Year	10 Year	15 Year
MSCI World Index	-10.44	4.25	2.55	7.43	4.06
Oasis Crescent Global Equity Fund	*-9.06*	*3.05*	*3.14*	*9.25*	*7.97*
BNP Paribas Islamic Equity Optimiser	*-10.17*	*5.48*	*2.94*	*7.91*	*na*
Templeton Shariah Global Equity	*-12.29*	*4.99*	*1.16*	*na*	*na*
Aberdeen Islamic Global Equity	*-12.83*	*5.61*	*1.25*	*9.55*	*na*
Global Shariah Funds	-11.08	4.78	2.12	8.90	na

In closing, for this analysis of conventional investments versus Islamic Finance investments a study of fund-specific performance was conducted. The performance of four major funds was drawn and an average was calculated as a proxy for performance of global Shariah funds. The small sample set is the result that not many of these funds exist and from the sample set selected it is only the Oasis Crescent Global Equity Fund that is in existence for twenty years and therefore fifteen year compound annual growth rates could be pulled. It was therefore only possible to draw the compound annual growth rates of the other funds for one year, three years, five years and ten years. The findings of this investigation present that over a three year and ten year time horizon, global Shariah funds outperformed the MSCI World Index however the one year and five year growth rates present a slight underperformance. This is a very limited sample set, drawn over a restricted time period however and if you highlight specific funds there is significant outperformance from the market in certain periods, worth mentioning is the Oasis Crescent Global Equity Fund that had major outperformance compared to the MSCI World Index over a fifteen year time period at 7.97% compared to the index at 4.06%, a 391 basis point difference and this could hint at the long term thinking behind these investments.

4.2 S&P 500 Index and S&P Shariah Index comparison

After gaining an insight into the global market situation of conventional investments compared to those in compliance with Islamic principles, the next section of this study focuses on the market in the United States, as it is the largest economy in the world and therefore a notable market to analyse as the happenings within this geography shifts the global economy and the indices that will be compared are the S&P 500 Index and the S&P Shariah Index. These are an appropriate comparison as the S&P Shariah Index takes the S&P 500 Index and screens for Shariah compliance. They are a very closely matching set of indices to compare and therefore the difference will reflect the impact of an Islamic investment philosophy compared to a conventional one with no other factors influencing results.

S&P 500 Index Top 10 Shares

	TICKER	NAME	SECTOR	WEIGHT (%)
1	MSFT UW Equity	Microsoft Corp	Technology	3.40
2	AAPL UW Equity	Apple Inc	Technology	3.35
3	AMZN UW Equity	Amazon.com Inc	Communications	3.29
4	GOOG UW Equity	Alphabet Inc	Communications	1.61
5	FB UW Equity	Facebook Inc	Communications	1.60
6	JNJ UN Equity	Johnson & Johnson	Consumer, Non-cyclical	1.50
7	JPM UN Equity	JPMorgan Chase & Co	Financial	1.45
8	GOOGL UW Equity	Alphabet Inc	Communications	1.39
9	XOM UN Equity	Exxon Mobil Corp	Energy	1.37
10	WMT UN Equity	Walmart Inc	Consumer, Cyclical	1.20
TOTAL				**20.16**

If one looks at the composition of the S&P 500 Index the top ten shares are very similar to that of the MSCI World Index, with the exception of Walmart Inc featuring in the S&P 500 Index top ten shares and not in the MSCI World Index top ten and Berkshire Hathaway Inc featuring in the MSCI World Index and not in the S&P 500 Index top ten shares. The top ten shares of the S&P 500 Index make up 20.16% of the index compared to the top ten shares of the MSCI World Index that make up 12.04%. It is therefore a more concentrated index but is still well structured and diversified. Unfortunately data of the composition of the S&P Shariah Index is not available and therefore an analysis in this regard could not be completed.

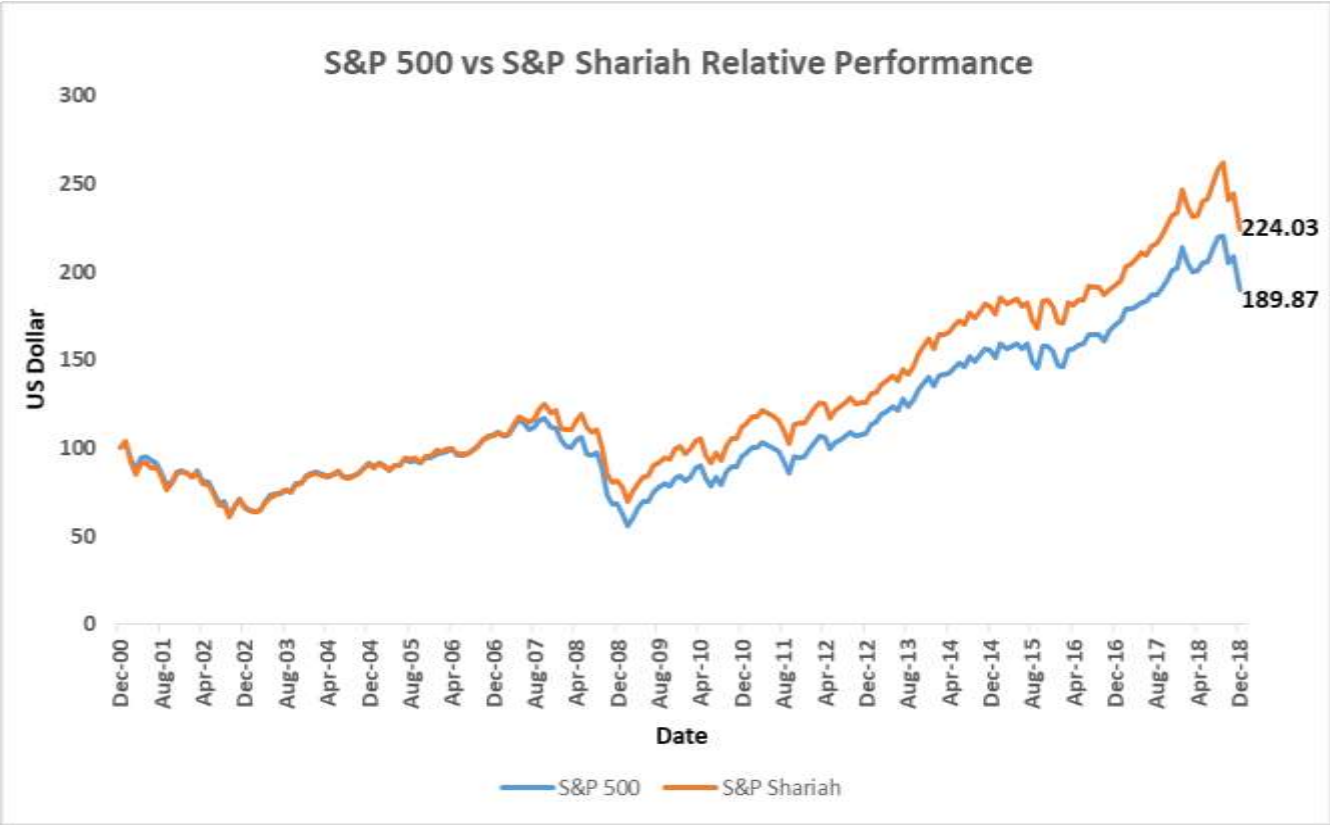
Performance	1YR CAGR	3YR CAGR	5YR CAGR	10YR CAGR	15YR CAGR
S&P 500 Index	-6.24%	7.04%	6.28%	10.75%	5.57%
S&P Shariah Index	-4.22%	7.49%	6.70%	10.63%	6.80%

An analysis of performance was completed, represented by the compound annual growth rates of the index prices on a one year, three year, five year, ten year and fifteen year time horizon, signifying the short, medium and long term. Data was drawn from 31 December 2003 until 31 December 2018. It was found that over the latest one year period the S&P Shariah Index outperformed by declining less at -4.22% than the S&P 500 Index at -6.24%, a 202 basis point difference. Over a three year, five year and fifteen year time period, that were all periods of positive market growth, the S&P Shariah Index had greater gains than the S&P 500 Index. However over a ten year period the S&P Shariah Index underperformed slightly at 10.63% compared to the S&P 500 Index growth of 10.75%, a 12 basis point difference. Overall however for the time period reviewed, the S&P Shariah Index appears to have performed well in comparison to the S&P 500 Index and during more difficult times held more strength.

Annual Performance	2008	2009	2010	2011	2012	2013
S&P 500 Index	-38.49%	23.45%	12.78%	0.00%	13.40%	29.60%
S&P Shariah Index	-32.62%	24.00%	10.37%	2.19%	9.95%	29.15%

Annual Performance	2014	2015	2016	2017	2018
S&P 500 Index	11.39%	-0.73%	9.54%	19.42%	-6.24%
S&P Shariah Index	11.25%	0.10%	6.33%	21.95%	-4.22%

In order to go deeper into an understanding of the return from the S&P 500 Index compared to that of the S&P Shariah Index, annual performance was calculated, represented by the growth in price of each index over the period 31 December 2008 until 31 December 2018. If one looks at specific periods the S&P Shariah Index demonstrated greater stability during tougher markets, declining by less than the S&P 500 Index during 2008 and 2018 and showing some growth of 0.10% in 2015 when the S&P 500 Index declined by 0.73%. There were also other years when the S&P Shariah Index had greater growth than the S&P 500 Index including 2009, 2011 and 2017. In 2010, 2012, 2013, 2014 and 2016 the S&P 500 Index outperformed the S&P Shariah Index in terms of growth. As discussed previously there is very limited data regarding the S&P Shariah Index and therefore more conclusions can be drawn as more information is released over time.



(S&P 500 Index represented as S&P 500 and S&P Shariah Index represented as S&P Shariah in graph above)

As with the study of the MSCI World Index and Dow Jones Islamic Index, an exercise was performed where the S&P 500 Index and the S&P Shariah Index were rebased to $100 on 31 December 2000, in order to gain a final and overall view of performance. As is evidenced by the graph above there was a time period from 2000 where the performance of the S&P 500 Index and the S&P Shariah Index were relatively head on head however from about mid 2007 the S&P 500 Index performance dipped beneath the S&P Shariah Index. This study illustrates that if $100 was invested at the end of the year 2000 it would be worth more in the S&P Shariah Index at $224.03 compared to the S&P 500 Index at $189.87. $100 invested in the S&P Shariah Index would therefore be worth 17.99% more than $100 invested in the S&P 500 Index. Overall this further

investigation into performance of Shariah investments compared to conventional ones demonstrates the relative strength of Islamic investments, the positive result of a more conservative investment philosophy and continues to hold up the theory of this thesis for the period reviewed.

While the Standard deviation and Sharpe ratios of the S&P 500 Index were calculated there was insufficient information to calculate the Standard deviation and Sharpe ratios of the S&P Shariah Index and as a result a comparison could not be drawn.

After completing the detailed analysis on performance a breakdown of the valuation metrics from 31 December 2009 until 31 December 2018 follows.

Price to Earnings Ratio	2009	2010	2011	2012	2013
S&P 500 Index	18.92	15.41	13.43	14.39	17.41
S&P Shariah Index	17.78	15.58	13.84	14.84	18.80

Price to Earnings Ratio	2014	2015	2016	2017	2018	10YR AVE	5YR AVE
S&P 500 Index	18.37	18.78	20.54	21.74	16.58	17.56	19.20
S&P Shariah Index	19.36	20.61	21.43	23.21	17.93	18.34	20.51

The first valuation metric that was considered was the Price to Earnings ratio, in order to gain an insight into the relative market valuation of the S&P 500 Index compared to the S&P Shariah Index. With the exception of 2009 the S&P 500 Index had a lower Price to Earnings ratio than the S&P Shariah Index during the periods under review. The ten year and five year averages were calculated and given the data, the S&P 500 Index had a lower ten year average Price to Earnings ratio of 17.56 times compared to the S&P Shariah Index of 18.34 times, as well as a lower five year Price to Earnings ratio of 19.20 times compared to the S&P Shariah Index of 20.51 times. As with the Dow Jones Islamic Index and the rules of supply and demand, it is expected that the S&P Shariah Index would be more expensive for investors than the S&P 500 Index.

Dividend Yield (%)	2009	2010	2011	2012	2013
S&P 500 Index	2.12	1.88	2.12	2.24	1.89
S&P Shariah Index	1.88	1.88	2.01	2.04	1.75

Dividend Yield (%)	2014	2015	2016	2017	2018	10YR AVE	5YR AVE
S&P 500 Index	1.95	2.15	2.09	1.89	2.15	2.05	2.04
S&P Shariah Index	1.79	1.95	1.95	1.75	1.94	1.89	1.88

In the eyes of investors, dividends are a key factor in making investment decisions and therefore the dividend yields of each index were carefully considered. In all the years in the sample set, the S&P Shariah Index had a slightly lower dividend yield than the S&P 500 Index. The ten year and five average figures follow suit. The difference in the dividend yield was however not large, with the S&P Shariah Index' ten and five year average at 16 basis points less than the S&P 500 Index and as was previously illustrated the S&P Shariah Index made up for this with the higher returns on the price side.

Free Cash Flow Yield (%)	2009	2010	2011	2012	2013
S&P 500 Index	8.40	7.71	8.85	6.76	7.04
S&P Shariah Index	5.82	6.04	6.24	5.86	4.70

Free Cash Flow Yield (%)	2014	2015	2016	2017	2018	10YR AVE	5YR AVE
S&P 500 Index	5.40	5.60	4.99	4.14	5.72	6.46	5.17
S&P Shariah Index	4.62	4.59	4.84	4.24	5.14	5.21	4.69

When looking at the Free Cash Flow Yield, the S&P 500 Index had higher values than the S&P Shariah Index for the years under investigation with the exception of 2017. The S&P 500 Index had a higher ten year average Free Cash Flow Yield of 6.46% compared to the S&P Shariah Index of 5.21%, as well as a higher five year average of 5.17% compared to the S&P Shariah Index of 4.69%. It appears that from a Free Cash Flow perspective the S&P 500 Index had greater strength however the S&P Shariah Index was not far off in comparison, with a125 basis point lower ten year average and a 48 basis point lower five year average than the S&P 500 Index. As mentioned in the discussion of the MSCI World Index and the Dow Jones Islamic Index, Shariah compliant investments tend to be more safeguarded as they hold lower debt and therefore a lower Free Cash Flow Yield should not shake investor confidence.

Return on Equity (%)	2009	2010	2011	2012	2013
S&P 500 Index	10.64	14.24	14.94	13.62	14.96
S&P Shariah Index	16.73	20.08	21.13	20.78	20.18

Return on Equity (%)	2014	2015	2016	2017	2018	10YR AVE	5YR AVE
S&P 500 Index	14.29	12.25	12.95	13.67	16.83	13.84	14.00
S&P Shariah Index	19.40	15.55	18.51	17.09	23.43	19.29	18.80

From a Return on Equity perspective the S&P Shariah Index significantly outperformed the S&P 500 Index in all the years in the time horizon considered. The ten year average Return on Equity of the S&P Shariah Index is considerably higher at 19.29% compared to the S&P 500 Index at 13.84% as well as the five year average of 18.80% compared to the S&P 500 Index of 14.00%. The S&P Shariah Index therefore had a 545 basis

point higher ten year average and 480 basis point higher five year average compared to the S&P 500 Index. This is a very favourable measure in proving the theory of this thesis for the timeframes reviewed, as from a Return on Equity to investors there is greater value from the S&P Shariah Index and therefore the Islamic United States based investment compared to the S&P 500 Index, the conventional one.

Net Debt/EBITDA	2009	2010	2011	2012	2013
S&P 500 Index	2.38	2.13	1.52	1.47	1.05
S&P Shariah Index	0.23	0.16	0.18	0.01	0.00

Net Debt/EBITDA	2014	2015	2016	2017	2018	10YR AVE	5YR AVE
S&P 500 Index	1.14	1.49	1.54	1.49	1.59	1.58	1.45
S&P Shariah Index	0.15	0.42	0.45	0.55	0.60	0.28	0.43

The final valuation metric considered was the Net Debt to EBITDA ratio as a measure of relative risk that an investor would be exposed to by investing in the S&P Shariah Index compared to the S&P 500 Index. As illustrated by the table above in all the years that were considered, the S&P Shariah Index had a notably lower Net Debt to EBITDA ratio than the S&P 500 Index. The ten year average Net Debt to EBITDA of the S&P Shariah Index is significantly lower at 0.28 times compared to the S&P 500 Index of 1.58 times and the five year average of 0.43 times compared to the S&P 500 Index of 1.45 times. Due to the principles of the Shariah, the companies that make up the S&P Shariah Index take on significantly less debt than those in the S&P 500 Index and as a result an investor is therefore exposed to much less risk from a debt perspective by investing in the S&P Shariah Index compared to the S&P 500 Index and this would serve their interest during crises such as the Subprime Crisis.

4.3 FTSE All Share Index and FTSE Shariah All Share Index comparison

The next section of this analysis focuses on the South African market specifically by comparing the FTSE All Share Index to the FTSE Shariah All Share Index. This is an appropriate comparison as the FTSE Shariah All Share Index is the Shariah compliant counterpart to the FTSE All Share Index within the South African market, based on Islamic screening factors. The aim of this analysis is to determine the relative performance of Shariah compliant investments and conventional ones within South Africa, as Islamic Finance is a growing and advancing field in this country.

FTSE All Share Index Top 10 Shares

	TICKER	NAME	SECTOR	WEIGHT (%)
1	NPN	NASPERS -N	Communications	18.13
2	BHP	BHP GROUP	Basic Materials	9.29
3	CFR	COMPAGNIE RICHEMONT	Consumer, Cyclical	7.03
4	AGL	ANGLO	Basic Materials	4.68
5	SOL	SASOL	Basic Materials	3.48
6	SBK	STANBANK	Financial	3.36
7	FSR	FIRSTRAND	Financial	3.06
8	MTN	MTN GROUP	Communications	2.35
9	SLM	SANLAM	Financial	2.04
10	BTI	BRITISH AM TOBACCO	Consumer, Non-cyclical	1.74
	TOTAL			**55.16**

FTSE Shariah All Share Index Top 10 Shares

	TICKER	NAME	SECTOR	WEIGHT (%)
1	GLN SJ Equity	GLENCORE	Basic Materials	17.97
2	BHP SJ Equity	BHP GROUP	Basic Materials	14.06
3	AGL SJ Equity	ANGLO	Basic Materials	10.42
4	SOL SJ Equity	SASOL	Basic Materials	6.10
5	VOD SJ Equity	VODACOM	Communications	5.57
6	S32 SJ Equity	SOUTH32	Basic Materials	3.97
7	MTN SJ Equity	MTN GROUP	Communications	3.86
8	AMS SJ Equity	AMPLATS	Basic Materials	3.34
9	MNP SJ Equity	MONDIPLC	Basic Materials	2.57
10	KIO SJ Equity	KUMBA IRON ORE	Basic Materials	2.10
	TOTAL			**69.95**

When looking at the makeup of the FTSE All Share Index and the FTSE Shariah All Share Index, what stands out is the high level of concentration that exists compared to the previous indices analysed. The top ten shares of the FTSE All Share Index constitute an astounding 55.16% of the index and the top ten shares of the FTSE Shariah All Share Index account for 69.95% of the index. In comparison on the conventional global and United States side, the MSCI World Index top ten shares account for 12.04% and the S&P 500 Index top ten shares account for 20.16% of the index, this is a 4312 basis point and a 3500 basis point lower top ten concentration respectively to the conventional FTSE All Share Index. On the Shariah compliant side the Dow Jones Islamic Index has a 5262 basis point lower top ten concentration at 17.33% than the FSTE Shariah All Share Index. If one looks at the FTSE All Share Index it is dominated by its top share Naspers which is solely 18.13% of the index. If this is compared to the MSCI World Index and the S&P 500 Index, their top share accounts for 2.13% and 3.40% of the index respectively, a much lower

concentration. The index consists of 20.48% Communications, 17.45% Basic Materials, 8.46% Financials, 7.03% Consumer (Cyclical) and 1.74% Consumer (Non-cyclical) shares. When looking at the FTSE Shariah All Share Index its top three shares account for 42.44% of the Index with its top share Glencore making up 17.97% of the index, while the top share of the Dow Jones Islamic Index only accounts for 3.57% of the index. What stands out about this index is that Basic Materials, mining stocks, account for eight of the top ten shares and makeup 60.52% of the index, with Communications stocks making up the rest at 9.43%. The FTSE Shariah All Share Index will therefore be very sensitive to commodity price moves and would suffer during events such as the commodity price slump that occurred in 2014/2015. The high level of concentration within the South African equity market presents a risk to investors overall and for investors seeking a Shariah compliant option within this market the investment universe is more limited than other geographies, Islamic Sukuk therefore present an impressive diversification opportunity for South African investors and this is a prospering field within this region with South Africa having released a sovereign Sukuk. The lack of diversification of these indices means that in this study the findings will hold less ground in comparison to indices analysed earlier, however because this is a South African paper these indices will still be reviewed.

Performance	1YR CAGR	3YR CAGR	5YR CAGR	10YR CAGR
FTSE All Share Index	-11.37%	1.33%	2.66%	9.38%
FTSE Shariah All Share Index	-2.62%	4.59%	-3.36%	4.04%

After looking at the structure of the South African indices a study of their performance was conducted in order to draw comparisons. Performance was measured as the compound annual growth rate of the index price. This was calculated on a one year, three year, five year and ten year time horizon from the period 31 December 2008 until 31 December 2018. Over a one-year period the FTSE Shariah All Share Index performed better than the FTSE All Share Index, by declining less at 2.62% compared to the FTSE All Share Index decline of 11.37%, a 875 basis point difference. Over a three year time frame the FTSE Shariah All Share Index also performed better than the FTSE All Share Index by having a compound annual growth rate of 4.59% compared to the FTSE All Share Index of 1.33%, a 326 basis point difference. Over the shorter term, for the period

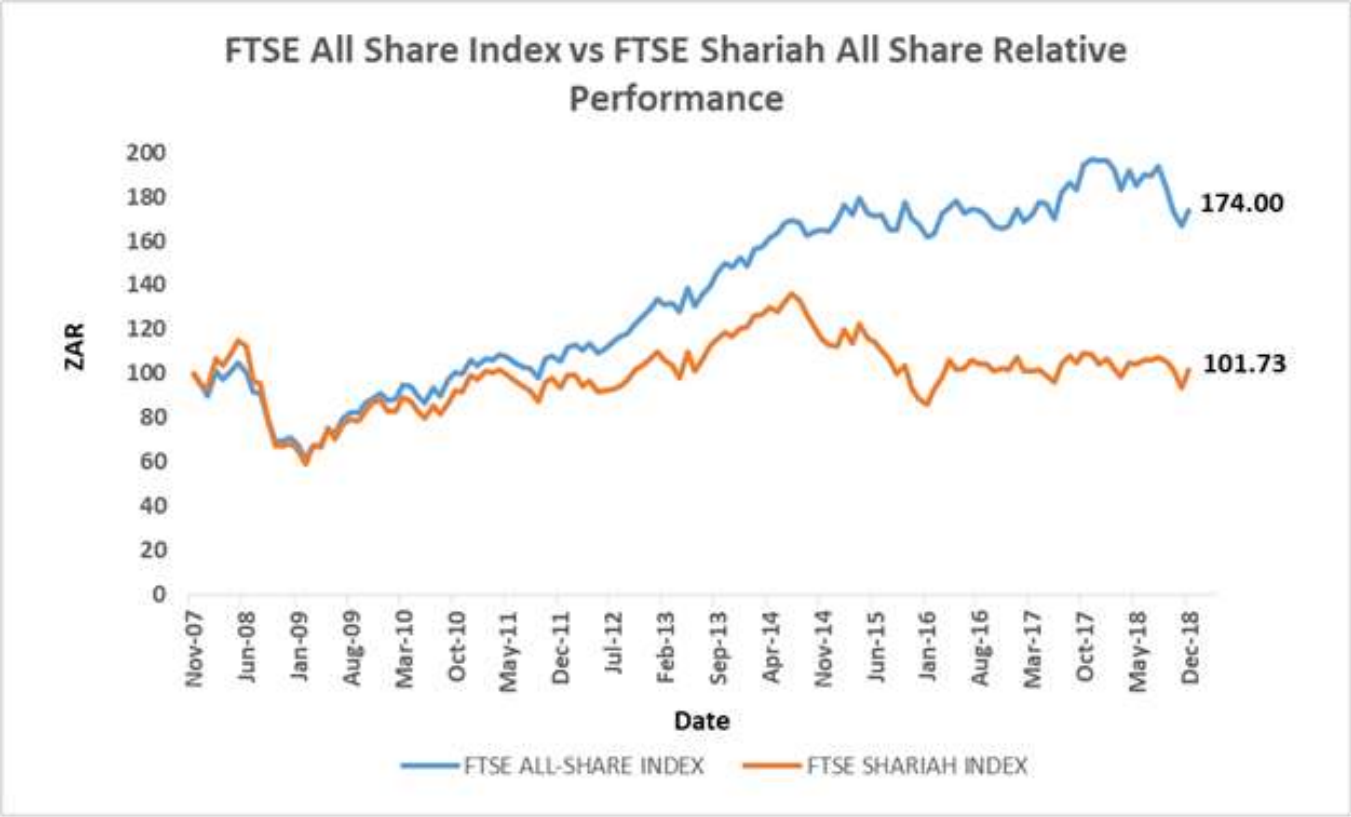
analysed, the FTSE Shariah All Share Index appears to be the outperformer. However over a five year timeframe the FTSE All Share Index performed better, by increasing by 2.66% compound annually compared to the FTSE Shariah All Share Index decline of 3.36% and over a ten year period having a growth rate of 9.38% compared to the FTSE Shariah All Share Index growth rate of 4.04%, a 534 basis point difference. As previously stated the sensitivity of the FTSE Shariah All Share Index to commodities is proven above as the commodity slump occurred within the five and ten year period analysed. The findings of this investigation appear inconclusive in proving a clear trend however, as discussed previously the lack of diversification within these indices creates a bias to certain industries, there were atypical events that occurred within the decade analysed including the 2008 Financial Crisis and the commodity slump and therefore once more data becomes available perhaps a clear trend will present and at the moment there is less value in the findings than in previous sections given the overconcentration.

Annual Performance	2008	2009	2010	2011	2012	2013
FTSE All Share Index	-25.72%	28.63%	16.09%	-0.41%	22.71%	17.85%
FTSE Shariah All Share Index	-27.87%	28.36%	12.67%	-5.35%	13.87%	13.07%

Annual Performance	2014	2015	2016	2017	2018
FTSE All Share Index	7.60%	1.85%	-0.08%	17.47%	-11.37%
FTSE Shariah All Share Index	-6.50%	-21.20%	14.31%	2.77%	-2.62%

In order to dive deeper into this analysis a study of annual performance was conducted by calculating the growth rates in the price of each index each year from 31 December 2008 until 31 December 2018. Unlike the previous Shariah indices, in 2008 the FTSE Shariah All Share Index actually underperformed the FTSE All Share Index by declining more, by 215 basis points. In all the subsequent years looked at except for 2016 and 2018, the FTSE Shariah All Share Index had lower returns than the FTSE All Share Index, in some years actually having significantly negative growth compared to positive growth in the FTSE All Share Index such as 2014 and 2015, where the FTSE All Share Index grew by 7.60% and 1.85% while the FTSE Shariah All Share Index declined by 6.50% and 21.20% respectively, which was to be expected given the FTSE Shariah

All Share Index' overexposure to commodities. In 2016, the FTSE Shariah All Share Index outperformed the FTSE All Share Index, having significant positive growth of 14.31% compared to the FTSE All Share Index growth of -0.08% and as discussed previously in 2018 the FTSE Shariah All Share Index declined by less than the FTSE All Share Index at -2.62% and -11.37% respectively, an 875 basis point difference. The FTSE Shariah All Share Index is not as well structured as its global counterparts and this is evident in the returns. As previously discussed the Shariah compliant index is over-concentrated which presents a disadvantage. More diversified and better structured Shariah compliant South African funds may therefore be a better proxy for performance in comparison to the conventional South African index and this will be done later in this study.



(FTSE All Share Index represented as FTSE All-Share Index and FTSE Shariah All Share Index represented as FTSE Shariah Index in graph)

Following the analysis of annual performance a final study regarding returns was conducted by rebasing the FTSE All Share Index and the FTSE Shariah All Share Index to R100 on 30 November 2007. What was discovered was that while there was a period between January 2008 and August 2008 where the holding in the FTSE Shariah All Share Index had more value, the indices were then relatively neck on neck but from about 2010 the FTSE All Share Index started to gain momentum in surpassing the FTSE Shariah All Share Index and as a result by 31 December 2018, R100 invested in the FTSE All Share Index was worth more at R174.00 compared to the FTSE Shariah All Share Index at R101.73. R100 invested in the FTSE All Share Index would be worth 71.04% more than R100 invested in the FTSE Shariah All Share Index from 30 November 2007 until 31 December 2018. For the period analysed an investment in the conventional index performed better than the Shariah compliant one.

Standard Deviation (%)	2008	2009	2010	2011	2012	2013
FTSE All Share Index	7.10	6.04	4.80	3.35	2.39	3.71
FTSE Shariah All Share Index	8.72	7.04	5.23	4.03	3.20	5.30

Standard Deviation (%)	2014	2015	2016	2017	2018
FTSE All Share Index	2.10	3.60	2.40	3.27	3.59
FTSE Shariah All Share Index	3.08	5.20	4.16	4.14	4.41

Standard Deviation (%)	3YR AVE	5YR AVE	10YR AVE
FTSE All Share Index	3.09	2.99	3.53
FTSE Shariah All Share Index	4.23	4.20	4.58

The next section tracks the standard deviation of the returns of the FTSE All Share Index and the FTSE Shariah All Share Index from the period 2008 until 2018 following the availability of data. In all the years under review the FTSE All Share Index had a lower standard deviation compared

to the FTSE Shariah All Share Index and therefore the three year, five year and ten year averages follow this trend. The South African Shariah compliant index therefore had a greater level of risk and volatility as compared to the conventional one in the sample set used, it is expected that given the lack of diversification within the index it is exposed to greater risk than its conventional counterpart.

The Sharpe ratios of the FTSE All Share Index and the FTSE Shariah All Share Index were calculated over a ten year period however negative average figures exist and therefore the data will not be used in the analysis.

Performance (%)	CAGR				
	1 Year	3 Year	5 Year	10 Year	15 Year
FTSE All Share Index	-11.37	1.33	2.66	9.38	11.44
Oasis Crescent Equity Fund	*-1.93*	*2.82*	*2.56*	*8.44*	*11.64*
Average Shariah General Equity	*-0.25*	*7.28*	*4.54*	*9.47*	*10.33*
27four Shari'ah Active Equity Prescient	*-1.85*	*1.19*	*5.85*	*na*	*na*
Element Islamic Equity Fund	*-0.46*	*8.69*	*2.78*	*5.80*	*na*
Old Mutual Albaraka Equity Fund	*-8.50*	*0.80*	*3.74*	*10.04*	*11.25*
South African Shariah Funds	-2.60	4.16	3.89	8.44	11.08

In closing the discussion on the South African market a comparison exercise was performed regarding the returns of South African Shariah compliant funds and the conventional FTSE All Share Index. Data of five South African Shariah compliant funds were drawn and their compound annual growth rates were compared on a one year, three year, five year, ten year and fifteen year time horizon. The averages of these were calculated

to form a proxy for South African Shariah compliant fund performance. What was evidenced is that over a one year, three year and five year period the compound annual growth rates of South African Shariah compliant funds were greater than that of the FTSE All Share Index. However over a ten year and fifteen year time frame the FTSE All Share Index slightly outperforms the South African Shariah compliant funds. There were certain outperformers during these period however such as the Old Mutual Al Barakah Equity Fund that had ten year compound annual growth of 10.04% compared to the FTSE All Share Index of 9.38%, a 66 basis point difference, and the Oasis Crescent Equity Fund that had fifteen year compound annual growth of 11.64% compared to the FTSE All Share Index of 11.44%, a 20 basis point difference. This is a small sample set however with some funds not being in existence for more than ten years. More fund facts and a longer time period will need to be evaluated in order to formulate a more conclusive opinion on the South African market.

4.4 Barclays Global Aggregate Bond Index and Dow Jones Sukuk Index comparison

The next section opens up a comparison between conventional fixed income securities and Shariah compliant ones. The Barclays Global Aggregate Bond Index was compared to the Dow Jones Sukuk Index. This was the most appropriate comparison as these are broad indices that comprehensively represent the global market for conventional bonds and Islamic Sukuk. A meaningful analysis could therefore be drawn in order to determine relative performance.

Performance	1YR CAGR	3YR CAGR	5YR CAGR	10YR CAGR
Barclays Global Aggregate Bond Index	-1.20%	2.70%	1.08%	2.49%
Dow Jones Sukuk Index	-3.41%	-0.59%	-0.29%	2.65%

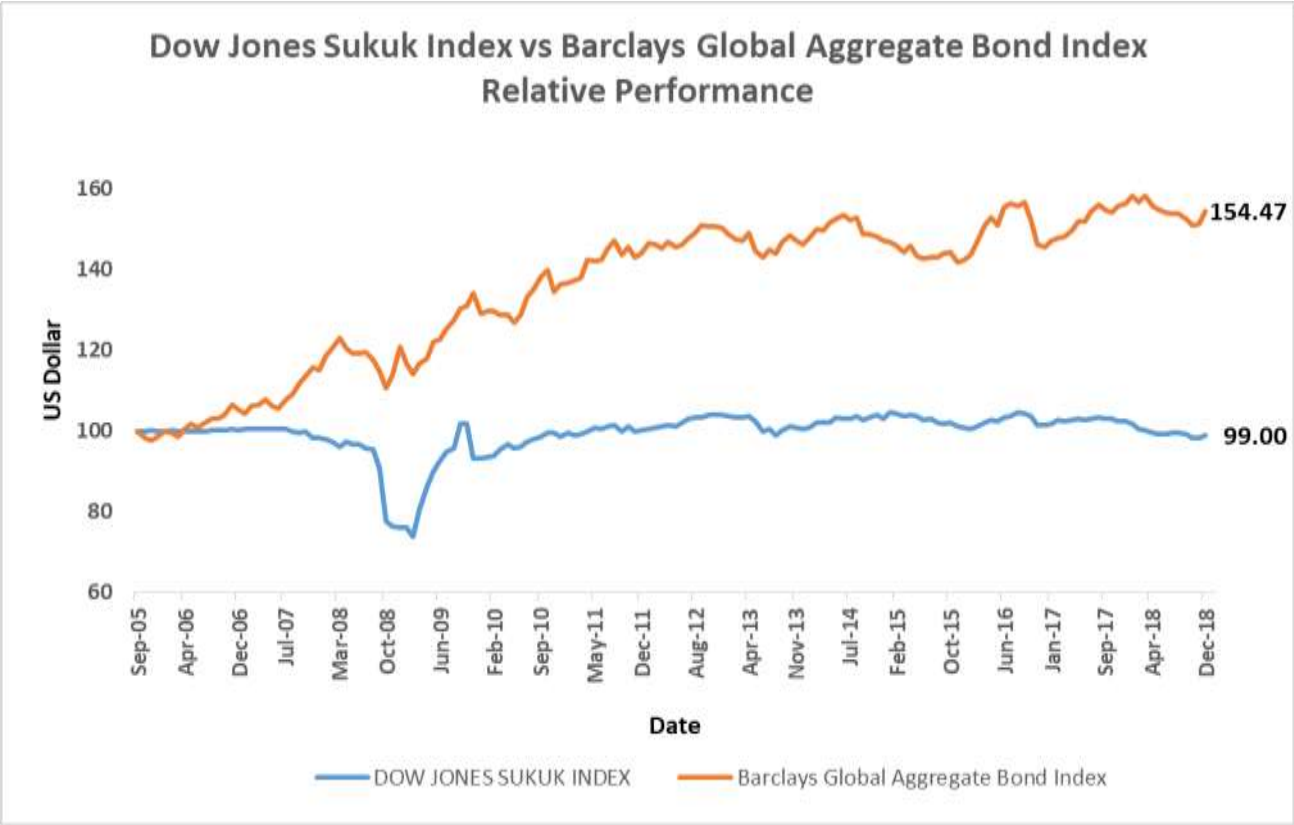
Investors seeking Shariah compliant investments are not only limited to equities as there is an alternative asset class, fixed income, in which they can invest, especially those who are more risk averse. This prospering field of Sukuk offer investors an attractive and steady income stream. This section will therefore look at the performance of the conventional Barclays Aggregate Bond Index in comparison to the Dow Jones Sukuk Index.

This field is still in its infancy and as a result there is not much information available. Performance is therefore measured as the compound annual growth rate in price of the indices over a one year, three year, five year and ten year time horizon. The data sample is from 31 December 2008 until 31 December 2018. What was found was that on a one year, three year and five year time period the Barclays Global Aggregate Bond Index outperformed that of the Dow Jones Sukuk Index, however over a ten year time period the Dow Jones Sukuk Index outperformed with a growth rate of 2.65% in comparison to the Barclays Global Aggregate Bond Index of 2.49%, a 16 basis point difference. Over a one year period the Dow Jones Sukuk Index declined by 221 basis points more than the Barclays Global Aggregate Bond Index while over a three year and five year period the Dow Jones Sukuk Index had negative growth while the Barclays Global Aggregate Bond Index posted positive growth. The data sample is very limited however and figures such as duration may be a better reflection of the relative performance, however this is not available.

Annual Performance	2008	2009	2010	2011	2012	2013
Barclays Global Aggregate Bond Index	4.79%	6.93%	5.54%	5.64%	4,32%	-2.60%
Dow Jones Sukuk Index	-22.58%	22.49%	5.85%	1.50%	3,69%	-3.40%

Annual Performance	2014	2015	2016	2017	2018
Barclays Global Aggregate Bond Index	0.59%	-3.15%	2.09%	7.39%	-1.20%
Dow Jones Sukuk Index	2.64%	-2.27%	0.81%	0.90%	-3.41%

In order to gain a deeper insight into the comparative performance, the annual growth rates in the price of the indices were calculated from 31 December 2008 until 31 December 2018. The Barclays Global Aggregate Bond Index outperformed the Dow Jones Sukuk Index in 2008, 2011, 2012, 2013, 2016, 2017 and 2018 while in 2009, 2010, 2014 and 2015 the Dow Jones Sukuk Index outperforms. More information other than price and a longer time frame will need to be acquired before any conclusive opinions can be formed.



In order to conclude the investigation into the performance of a Shariah compliant fixed income index in comparison to a conventional one the indices were rebased to $100 on 30 September 2005. What was found was that if $100 were invested in 2005 into the Barclays Global Aggregate Bond Index it would be worth more at $154.47 on 31 December 2018 in comparison to $99 in the Dow Jones Sukuk Index. This indicates that an investment of $100 would have declined over the period at 1% if invested in the Dow Jones Sukuk Index. This also reflects that an investment made in the Barclays Global Aggregate Bond Index on 30 September 2005 would be worth 56.03% more on 31 December 2018 than an investment made in the Dow Jones Sukuk Index. In terms of index price the Barclays Global Aggregate Bond Index therefore appears to have been the

outperformer over the time period analysed, however as previously mentioned a better measure of relative fixed income performance could be used as more information becomes available.

Standard Deviation (%)	2006	2007	2008	2009	2010	2011	2012
Barclays Global Aggregate Bond Index	1.15	1.26	2.68	2.31	1.82	1.42	0.83
Dow Jones Sukuk Index	0.12	0.40	3.96	4.56	0.70	0.85	0.31

Standard Deviation (%)	2013	2014	2015	2016	2017	2018
Barclays Global Aggregate Bond Index	1.34	1.11	0.85	2.03	0.76	1.03
Dow Jones Sukuk Index	1.01	0.65	0.65	0.85	0.36	0.54

Standard Deviation (%)	3YR AVE	5YR AVE	10YR AVE
Barclays Global Aggregate Bond Index	1.28	1.16	1.35
Dow Jones Sukuk Index	0.58	0.61	1.05

The standard deviation of the Barclays Global Aggregate Bond Index as well as the Dow Jones Sukuk Index was calculated over the period 2006 until 2018 due to availability of data. In all years except 2008 and 2009 the Barclays Global Aggregate Bond Index had a higher standard deviation than the Dow Jones Sukuk Index. The Barclays Global Aggregate Bond Index therefore also had higher three year, five year and ten year average standard deviation figures than the Dow Jones Sukuk Index. The Barclays Global Aggregate Bond Index which represents conventional fixed income securities therefore demonstrated greater risk over the period reviewed compared to the Dow Jones Sukuk Index, the Shariah compliant alternative therefore offers a less volatile option. This is especially true as high risk bonds are not in compliance with Shariah Law, which protected Islamic Banks during the 2008 Financial Crisis and as results spurred global demand for these banks, making their growth rates faster than conventional banks.

The Sharpe ratios of the Barclays Global Aggregate Bond Index and the Dow Jones Sukuk Index were calculated over a fifteen year time period but with negative average figures the data will not be used in this study.

4.5 Merrill Lynch Global Bond Index and Dow Jones Sukuk Index comparison

The next section advances the investigation into the relative performance of Shariah compliant and conventional fixed income securities. The Merrill Lynch Global Bond Index was compared to the Dow Jones Sukuk Index. The Merrill Lynch Global Bond Index is another reputable index that represents the global bond market and therefore was considered a good alternative to the Barclay Global Aggregate Bond Index in order to compare to the Islamic index. This thesis aims to be as thorough as possible in the analysis of each section and therefore an additional bond index was included.

Performance	1YR CAGR	3YR CAGR	5YR CAGR	10YR CAGR
Merrill Lynch Global Bond Index	-1.78%	11.54%	3.44%	6.31%
Dow Jones Sukuk Index	-3.41%	-0.59%	-0.29%	2.65%

Due to the limited data available, further research was conducted and therefore another conventional fixed income index was used as a comparison. The performance of the Merrill Lynch Global Bond Index was compared to that of the Dow Jones Sukuk Index above. The one year, three year, five year and ten year compound annual growth rates in price were calculated during the period 31 December 2008 until 31 December 2018. Unlike the Barclays Global Aggregate Bond Index, the conventional Merrill Lynch Global Bond Index outperformed that of the Dow Jones Sukuk Index in terms of price growth over all the timeframes looked at. The Dow Jones Sukuk Index posted negative growth over a three year and five year period when the Merrill Lynch Global Bond Index increased and declined by 163 basis points more than the Merrill Lynch Global Bond Index over the latest one year period, declining by -3.41% when the Merrill Lynch Global Bond Index declined by -1.78%. While the Dow Jones

Sukuk Index had positive growth of 2.65% over a ten year period the Merrill Lynch Global Bond Index increased by 366 basis points more, with a compound annual growth rate of 6.31%. As previously mentioned index price growth is not the best comparison for relative performance of conventional and Shariah compliant bonds and as more information becomes available a better comparison can be performed in time.

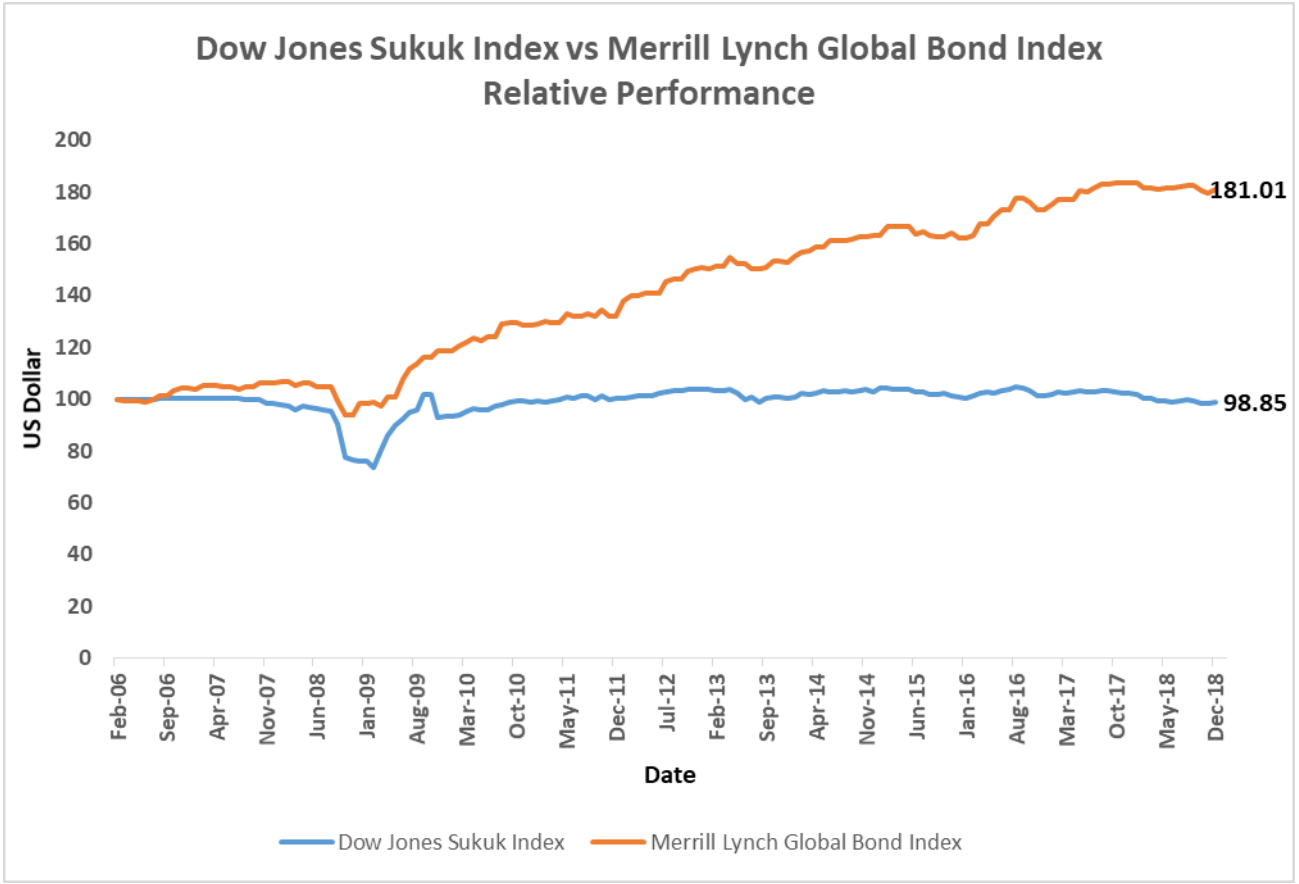
Yield to Maturity (%)	5YR AVE
Merrill Lynch Global Bond Index	3.36
Dow Jones Sukuk Index	3.05

The Merrill Lynch Global Bond Index and the Dow Jones Sukuk Index have data regarding the yield to maturity available from 31 January 2013 and as a result five year averages could be calculated. What is evidenced is that the Merrill Lynch Global Bond Index had a slightly higher five year average yield to maturity at 3.36% in comparison to the Dow Jones Sukuk Index of 3.05%, a 31 basis point difference. The limited data however means that the results are not extensive enough.

Annual Performance	2008	2009	2010	2011	2012	2013
Merrill Lynch Global Bond Index	-7.53%	20.61%	8.42%	4.86%	12.05%	1.32%
Dow Jones Sukuk Index	-22.58%	22.49%	5.85%	1.50%	3.69%	-3.40%

Annual Performance	2014	2015	2016	2017	2018
Merrill Lynch Global Bond Index	6.75%	-0.55%	7.49%	5.65%	-1.78%
Dow Jones Sukuk Index	2.64%	-2.27%	0.81%	0.90%	-3.41%

Further analysis was then conducted with respect to the annual returns from 31 December 2008 until 31 December 2018. In all years except for 2009 the Merrill Lynch Global Bond Index outperformed that of the Dow Jones Sukuk Index in terms of price growth of the respective indices.



In order to conclude the analysis of returns of a conventional versus a Shariah compliant fixed income fund, the Merrill Lynch Global Bond Index as well as the Dow Jones Sukuk Index were rebased to $100 on 28 February 2006. What was found was that by 31 December 2018, if the $100 were invested on 28 February 2006 in the Merrill Lynch Global Bond Index it would be worth 83.12% more than the value of the Dow Jones Sukuk Index, at $181.01 and $98.85 respectively. In terms of price growth the Merrill Lynch Global Bond Index performed better over the period analysed.

Standard Deviation (%)	2007	2008	2009	2010	2011	2012
Merrill Lynch Global Bond Index	0.69	2.65	2.08	1.19	1.17	1.33
Dow Jones Sukuk Index	0.40	3.96	4.56	0.70	0.85	0.31

Standard Deviation (%)	2013	2014	2015	2016	2017	2018
Merrill Lynch Global Bond Index	0.97	0.59	0.94	1.28	0.63	0.51
Dow Jones Sukuk Index	1.01	0.65	0.65	0.85	0.36	0.54

Standard Deviation (%)	3YR AVE	5YR AVE	10YR AVE
Merrill Lynch Global Bond Index	0.81	0.79	1.07
Dow Jones Sukuk Index	0.58	0.61	1.05

The standard deviation of the Merrill Lynch Global Bond Index and the Dow Jones Sukuk Index were calculated over the period 2007 until 2018 due to the availability of data. In all the years in the sample set except for 2008, 2009, 2013, 2014 and 2018 the Merrill Lynch Global Bond Index had a higher standard deviation compared to the Dow Jones Sukuk Index. The Merrill Lynch Global Bond Index also had a higher three year, five year and ten year average standard deviation compared to the Dow Jones Sukuk Index. It therefore appears that overall in the sample set investigated, the conventional bond index had greater risk and volatility compared to the Islamic alternative and the Sukuk therefore present a more stable investment opportunity which is to be expected as naturally in accordance with the principles of Islam they avoid high risk bonds.

The Sharpe ratios of the Merrill Lynch Global Bond Index and the Dow Jones Sukuk Index were calculated over a twelve year time period but with negative average figures the data will not be used in this study.

4.6 Barclays Global Aggregate Bond Index and Merrill Lynch Global Bond Index comparison to Shariah Compliant Fixed Income Funds

Performance (%)	CAGR			
	1 Year	3 Year	5 Year	10 Year
Barclays Global Aggregate Bond Index	-1.20	2.70	1.08	2.49
Merril Lynch Global Bond Index	-1.78	11.54	3.44	6.31
Oasis Crescent Global Income Fund	*-0.02*	*2.13*	*2.15*	*na*
Franklin Global Sukuk Fund	*-1.07*	*2.78*	*3.01*	*na*
BNP Paribas Islamic Hilal Income Fund	*0.48*	*2.66*	*na*	*na*
Rasmala Global Sukuk Fund	*1.55*	*4.41*	*na*	*na*
Emirates Global Sukuk Fund	*1.26*	*3.84*	*na*	*na*
Global Shariah Income Funds	0.44	3.16	2.58	na

To conclude the analysis of conventional versus Shariah compliant fixed income funds data about five global funds was drawn. The compound annual growth rates on a one year, three year and five year time horizon were gathered. Due to the early stage in the introduction of these funds most funds are not older than five years. The averages of the growth rates of these funds were calculated to form a proxy for Global Shariah Income Funds. What was found is that over all time periods, the Global Shariah Income Funds outperformed the Barclays Global Aggregate Bond Index. However over all timeframes looked at except a one year time period the Merrill Lynch Global Bond Index outperformed the funds. With the limited data set conclusive opinions could therefore not be drawn. As these funds are in existence for longer more definitive results can be found. However what can be argued is that Sukuk have greater stability and lower risk as a form of debt as there is real business activity backing the cash flow. Therefore for investors that prefer less risk exposure Sukuk offer an attractive investment opportunity within the fixed income asset class.

Chapter Five: Conclusion

This paper conducted thorough and extensive research in order to present a detailed quantitative and qualitative study comparing conventional and Shariah compliant investments. From the available pool of data, conclusions were drawn where possible and where explicitly evidenced. Limitations in data were a minor setback however on the whole great value was found in the tests run.

When conducting this study the fundamental question being investigated was the relative value and stability of Shariah compliant investments compared to conventional ones. When looking at the two most well-structured and diversified indices, that represent the global market perspective, being the MSCI World Index and the Dow Jones Islamic Index, it was demonstrated that Islamic investments are the most favourable investment opportunity in terms of returns during the period under review. Results are similar for the United States market, represented by the S&P 500 Index and the S&P Shariah Index. These Islamic indices also proved to perform well during more difficult periods such as the 2008 Financial Crisis. While the Shariah indices are a more expensive investment, they offer significant Return on Equity at a much lower level of risk with notably lower debt levels than conventional equity investments.

Moving on to the South African market, what was found in this analysis was that both the conventional as well as the Shariah compliant indices, the FTSE All Share Index and the FTSE Shariah All Share Index, were highly concentrated with the top ten shares in the FTSE Shariah All Share Index mainly comprising of mining stocks. The findings of the tests run on these indices therefore held less value in the study, however what was found was that overall investments in the FTSE All Share Index were worth more over the time period analysed, compared to those in the FTSE Shariah All Share Index. The FTSE Shariah All Share Index also presented a more volatile investment option. The results from the study performed on the South African market are therefore less favourable than those for global markets, but this might be a function of the make-up of the local bourse. Mining shares have underperformed in recent periods due to a combination of economic factors, which will have impacted on the performance of the local Shariah Index as a result.

The study closed with an investigation into global Shariah compliant fixed income securities, with two indices used to represent the conventional market, the Barclays Global Aggregate Bond Index and the Merrill Lynch Global Bond Index, and the Dow Jones Sukuk Index representing the Islamic option. The highlight from this study illustrated that the conventional fixed income securities outperformed the Shariah compliant ones for the timeframe analysed. The field of Sukuk is still in its infancy however and as it matures results may differ. Of significance however is that real stable business activity backs returns on Sukuk and as a result it offers a less risky investment opportunity for the more risk averse investor.

When analysing fund specific data on the global and South African equity and the global fixed income side conclusions could not be drawn about relative outperformance. This is to be expected given the limited sample set and more conclusive results may be found in the future as deeper testing becomes possible.

The field of Shariah compliant investments has been rapidly expanding and the future prospects for this industry are significant. It has mainly been supported by the growing demand of the Muslim population, the fastest growing religion in the world. Post the Financial Crisis the risk appetite of investors has become more prudent and therefore this form of investments offer an attractive opportunity for Muslims as well as non-Muslims. As people become more aware of the stability offered by this industry, are informed about the nature of the products offered and mind sets shift, the demand is likely to increase in order to diversify the risk exposure in investment portfolios.

Chapter Six: Recommendations

This study involved an in depth search for available data in order for the tests to be as conclusive as possible. However, as the modern field of Islamic investments is relatively new in comparison to the conventional industry, there were some limitations in the amount of data that could be drawn. As the field matures and more data becomes available there is an opportunity to run more tests that will hold greater value with an expanded sample set. This is especially true for the field of Islamic fixed income securities where there was minimal data available. The analysis was based on relative index price performance, where a better measure such as duration could have been used as a superior comparison, however this data was not published and therefore if it is made available in time, an analysis can be conducted in order to gain a deeper insight into this field of Islamic Finance. The MSCI World Index is widely used across the financial industry to represent the global economy and therefore this index was used as the proxy for conventional investments. As the MSCI World Index is made up of developed markets and it was compared to the Dow Jones Islamic Index that includes developing markets in this study, there is an opportunity to compare the Dow Jones Islamic Index to a conventional index that has developed and developing market exposure in future research, in order for a more like for like comparison to occur.

When looking at fund specific performance there were also limited options from which to draw data. As more investment houses offer Shariah compliant investment products deeper testing can be conducted in order to gain stronger evidence. As this paper only looked at the overall global and two country markets, there is an opportunity to investigate Shariah compliant investment performance in other markets to gain greater insight, especially in hubs with strong Muslim populations such as Bahrain and Kuala Lampur and then more diverse hubs such as London. This paper did not discuss Islamic banks in detail and this is a pioneering and advancing area within the field of Islamic Finance, with Fintech offering an expansive opportunity for Islamic banks. There is therefore opportunity to extensively compare conventional and Islamic banks in future research. While this investigation attempted to cover all aspects, there is always room for further research when it comes to an industry that is advancing as we speak.

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